Dental Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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SECTIONS

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1. To present a selection of pertinent literature representative of all points of view within the profession;

2. To provide, by a few hours' reading each month, a survey of the significant advances being made by dentistry throughout the world, as reflected in current dental literature; and

3. To supply enough data in each abstract so that the reader may determine whether he wishes to refer to the original article for more complete information.

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Public health dentistry

Further observations on the influence of citrus fruit juices on human teeth

Adeeb E. Thomas. *New York D.J.* 23:424-430 Nov. 1957

This study was conducted to determine whether the daily ingestion of various amounts of citrus fruit juice or carbonated beverage would result in either macroscopic or microscopic changes in human tooth enamel.

Seventy students of the University of Alabama School of Dentistry and School of Dental Hygiene were selected. A weekly clinical macroscopic study was made of the labial surfaces of the upper six anterior teeth during the experiment. Concurrently, a Kodachrome picture was taken which included the labial surfaces of both upper and lower anterior teeth. Also, collodion replicas of the labial surfaces of the upper central incisors were made and studied microscopically.

The subjects were divided into three groups of 20 each and one group of ten. Each group of 20 was composed of ten women and ten men. The group of ten contained five women and five men. The average age of all groups was 21 years.

The first 20 drank only orange juice daily, the second 20 drank only grapefruit juice, and the third 20 drank only Coca-Cola. The groups consumed only their respective juice or beverage, refraining from any other citrus fruit or carbonated beverage. The ten subjects in the control group refrained from ingesting carbonated beverages or citrus fruit in any form.

The three experimental groups of 20 each subsequently were divided into four groups of five each. One of the four groups drank six ounces daily of their selected juice or beverage, the second group of five drank 12 ounces, the third 18 ounces and the fourth 24 ounces.

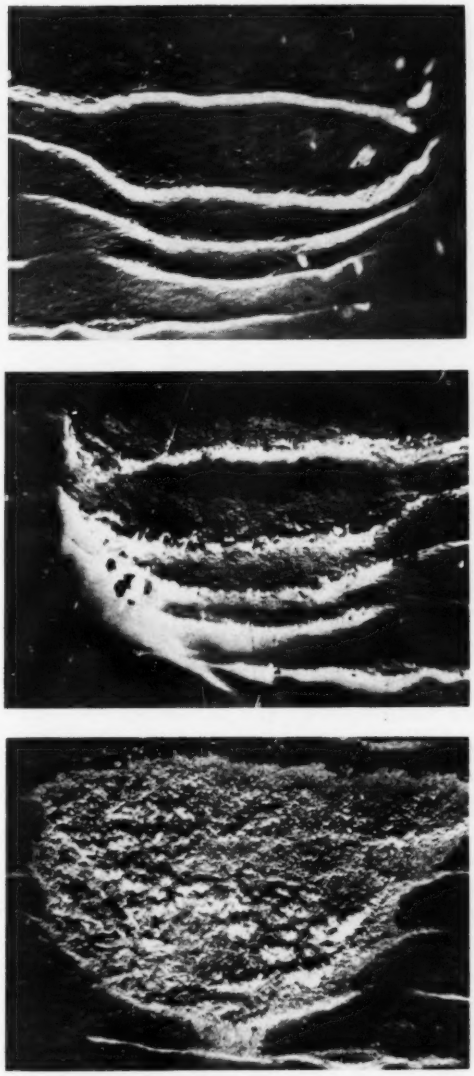


Figure 1 Above: Initial collodion replica on left central incisor of a subject drinking 24 ounces of grapefruit juice daily. Pictured is a deep pit on the labial surface containing well-delineated perikymata. Center: Replica of the same area six weeks later showing gradual modifications of the perikymata and the appearance of enamel rod ends. Below: The same area photographed on the final replica of the study. A complete loss of perikymata and deep pits in the enamel are evident. Rod ends can be seen throughout

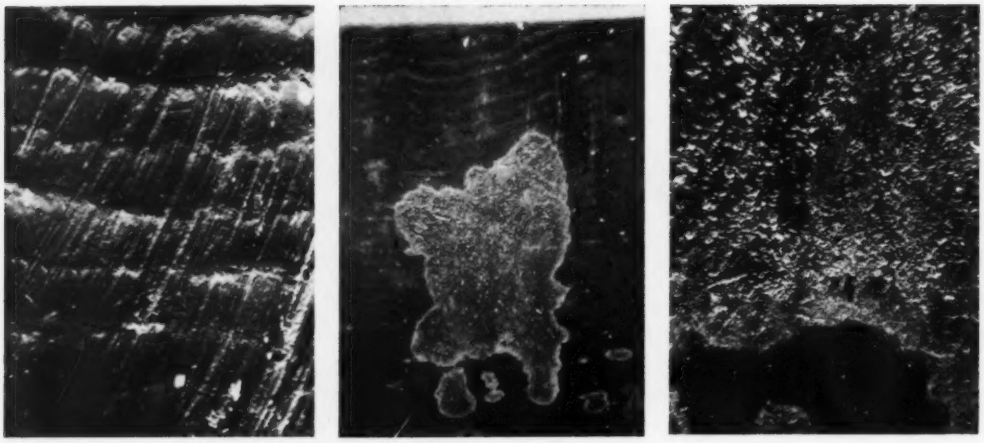


Figure 2 Left: Initial replica of right central incisor of a subject drinking 24 ounces of Coca-Cola daily. Center: The final replica of the same surface showing gradual disappearance of the original scratches in the upper right hand corner. Immediately below can be seen a large area of enamel alteration with several smaller ones. Right: A medium power picture of the lower portion of the large area demonstrating severe pitting and gross changes in the enamel topography

Some alteration in the enamel was observed in all experimental groups. The group consuming the carbonated beverage demonstrated greater change not only in degree but in frequency than either of the other two. The severest change was observed in the subject who consumed 24 ounces of Coca-Cola daily. Next was that caused in the enamel of the subject drinking 24 ounces of grapefruit juice. In the group ingesting orange juice, two students who drank 18 ounces daily and two who drank 24 ounces daily showed enamel changes. In the group consuming grapefruit juice, two subjects drinking 24 ounces, one drinking 18 ounces, and one 12 ounces daily showed alterations in the enamel. In the group taking carbonated beverages, four students consuming 12 ounces, one drinking 18 ounces, and two 24 ounces daily demonstrated modification of the enamel. The mildest changes which appeared were observed in the group drinking orange juice. The first evidence of any alteration in the enamel surface appeared in all groups between the fourth and sixth week of the study. No specific region or tooth was consistently modified.

One need not anticipate that the consumption of a specific quantity of a citrus juice or carbonated beverage will result in enamel changes. Although one or more in certain subgroups demonstrated enamel modifications, the remaining subjects consuming equal amounts experienced no change in the enamel topography. Several etiologic factors may be involved. The importance of these enamel alterations has not been established. The importance of the problem is modified by the knowledge that the average individual does not consume 18 or more ounces of citrus juice or carbonated beverages daily over a protracted period. The ultimate relation between the altered enamel regions and the caries process or tooth esthetics is problematical. The possibility of remineralization of such regions, as suggested by Wolf (1941), bears further investigation.

University of Alabama School of Dentistry, Birmingham, Ala.

Experimentally produced caries in molars of Syrian golden hamsters: the influence of different diets on caries susceptibility

(Studien über die Kariesanfälligkeit der Molaren des syrischen Goldhamsters unter verschiedenen Nahrungseinflüssen)

C. H. Plathner and H. Taatz.
Deut.Zahn Mund Kieferhk. 27:374-387
Aug. 1957

At the Dental Clinic of the University of Halle/Saale, Germany, serial experiments were carried out to establish whether the susceptibility to artificially produced caries in Syrian golden hamsters can be influenced by different cariogenic diets.

Previous histologic and biologic studies have shown that the molars of hamsters resemble human molars anatomically and morphologically. Therefore, the study was limited to experimentally produced carious lesions in hamster molars.

Syrian golden hamsters from different litters of one selected strain were bred and raised under carefully controlled conditions in a standardized environment.

In the first test series, 30 hamsters were used which were divided into three experimental groups (eight animals each) and one control group (six animals).

Group 1 received a diet similar to that described by P. H. Keyes (1954), consisting of 3 Gm. pure wheat flour, 3 Gm. powdered sugar, 3.75 Gm. potato starch and 4.5 Gm. powdered milk.

Group 2 received the same diet to which 20 ppm sodium fluoride was added.

Group 3 received the same diet to which 40 ppm sodium fluoride was added.

The control group was fed a normal diet consisting mainly of wheat, oats, barley, vegetables and milk.

In the second test series 64 hamsters were used. The three experimental groups consisted of 16 animals and so did the control group.

The diet fed to each group was similar to that given in the first tests.

The drinking water supplied had a fluoride content of 0.3 ppm.

In the first tests pure white sand was used as bedding material, and in the second tests wood fibers were used. All animals were housed in cages in a cellar laboratory with no natural light. Several hamsters which showed symptoms of rickets were irradiated with ultraviolet rays. To prevent avitaminosis, all experimental animals received adequate amounts of fruits and vegetables once a week.

The test period for the first group was 125 days; for the second group 376 days; for the third group 286 days and for the control group 372 days.

In the animals of all experimental groups no caries in the molars was found after from 40 to 60 days.

After the different test periods, the animals were sacrificed and the dissected skulls were preserved in a 5 per cent Formalin solution. Data on caries incidence and dietary manipulations were recorded.

The effect of the cariogenic diets, the caries-preventive effect of the added fluoride and the nitrogen, as well as the pH value of the individual saliva, were determined.

The conclusions reached are as follows:

1. Accurate statistical data with a certainty rate of almost 99 per cent are obtainable if from 24 to 30 animals are used in serial experiments.

2. The test and observation periods should continue for from 180 to 240 days.

3. Experiments should begin either prior to birth or from 24 to 36 days after birth.

4. Prevention of caries in the molars of Syrian golden hamsters is achieved to a high degree if a fluoride concentration of 20 ppm is added to the diet. An addition of 40 ppm fluoride to the diet, paradoxically, seems to increase the incidence of caries.

5. The diet described by Keyes has no significant cariogenic effect and, therefore, is unsuited for such experiments.

6. The pH value of hamster saliva is 8.52; that of human saliva lies between 5 and 7.5.

7. The nitrogen content of hamster saliva lies between 1.57 and 1.79 mg. nitrogen per milliliter, that of human saliva between 0.25 and 0.65.

8. The variations in the weights of the experimental animals are so great that a comparison appears to be inconclusive.

9. No exact determination is possible in regard to the individual susceptibility or resistance to experimentally induced caries.

10. The effect of dietary factors should be clarified further. It will be necessary, however, to develop several strains of Syrian golden hamsters in which the inherited susceptibility or resistance should be determined prior to the experiments.

Grosse Steinstrasse 19, Halle/Saale, Germany

A clinical study of the effectiveness of the roll and Charters' methods of brushing teeth

Glenn H. Curtis, Clarence M. McCall, Jr., and Hogne I. Overaa. *J.Periodont.* 28:277-280 Oct. 1957

Two hundred students from the University of Michigan School of Dentistry and Dental Hygiene, ranging in age from 18 to 31, were selected for this study. After an examination to record stained tooth surfaces and regions of gingival inflammation, three groups were formed, each group representing as nearly as possible an equal cross section of the entire body of subjects. Case studies were completed on 157 subjects.

Group 1 used the roll method of brushing, in which the brush bristles are placed high in the vestibule with the bristle ends directed apically. Firm lateral pressure against the gingival tissues and teeth is maintained as the brush is moved slowly toward the occlusal plane. As the brush approaches the occlusal surface, it is turned slowly so that the bristle ends touch the tooth enamel. This entire procedure is repeated six times in each area.

Group 2 was assigned to the Charters' method in which the bristles are placed in contact with the tooth enamel and gingivae with the ends pointed at about a 45 degree angle to the plane of occlusion. Lateral and downward pressure is then placed on the brush and the brush is vibrated gently back and forth.

Group 3, the control group, was requested to maintain the oral hygiene to which members of this group were accustomed.

Three identical brushes were given each subject with instructions to use each brush only once in 24 hours. The subjects were re-examined after three weeks and again at the end of an additional 13 weeks. The following conclusions were reached:

1. There was no statistically significant reduction of stain achieved by either the roll or Charters' technics as compared with that of the control group.

2. A statistically significant reduction in inflammation occurred between the roll and control groups in the lower jaw and in the total amount of inflammation.

3. Since neither method effectively cleansed the lower anterior facial segments, dental floss or other mechanical aids are needed to supplement the toothbrush in caring for such areas.

4. To achieve optimal results from a toothbrushing technic, the method should be adapted to the needs of the individual and thorough instruction with supervised periods of drill should be given.

School of Dentistry, College of Medical Evangelists, Loma Linda, Calif.

Use of sea salt

J.A.M.A. 165:1769 Nov. 30, 1957

Q. As a substitute for fluoridating the water supply, it has been suggested that, inasmuch as salt obtained by evaporating sea water contains appreciable contents of fluoride, it might be possible to achieve satisfactory results by substituting sea salt for table salt. Sea salt contains trace elements, however, some of which might be toxic. Please give an opinion as to the possible effectiveness of sea salt as a source of fluoride, and an opinion about the possible toxicity.

A. The average composition of sea water includes 37 ppm fluoride, and the listed analysis of one commercial preparation of sea salt is 33 ppm fluoride. If an intake of 10 Gm. of table salt is assumed, an equivalent amount of sea salt would supply 0.33 mg. of fluoride. This might be compared with approximately 1 mg. of fluoride supplied in 1 quart of water fluoridated to 1 ppm.

Sea salt is used by a large majority of the population of the world. Although a specific toxicity test has not been conducted, the data ob-

tained from comparing nutritional effects of feeding high levels of sea salt, versus purified sodium chloride, to rats indicate that sea salt is less toxic than purified sodium chloride or the usual table salt. In fact, in conditions in which the diet is limited in the B complex vitamins, specifically thiamine and riboflavin, there appears to be a beneficial effect from feeding sea salt, although this protective action cannot be explained.

American Medical Association, 535 North Dearborn Street, Chicago 10, Ill.

The relationship of endemic fluorides to the need and demand for dental services in New Mexico

David F. Striffler. *New Mexico D.J.* 8:13-16 Aug. 1957

A study conducted by the Division of Dental Health of the New Mexico Department of Public Health showed that 12 to 15 year old continuous residents of Belen (average fluoride content of water 1.0 ppm) had only 1.9 DMF permanent teeth, whereas a similar group from Las Vegas (average fluoride content of water 0.3 ppm) had a DMF rate of 7.5. In other words, the Belen youth had only about a fourth as much tooth decay as did a comparable group in Las Vegas.

Seventy-six per cent of the Belen youngsters who were examined, and 90 per cent of the Las Vegas youngsters, designated themselves as Spanish American. In Belen the average person 25 years old and over had completed 9.8 years of schooling; in the City of Las Vegas, 9.7 years, and in West Las Vegas, 7.4 years. The median income in Belen was $2,654; in Las Vegas, $1,691, and in West Las Vegas, $1,107. In Valencia County (Belen) the dentist-population ratio at the time of the survey was 1:7,300; in San Miguel County (the two municipalities which constitute Las Vegas), 1:6,500. Neither county has public dental clinics.

It would be suspected that Belen would have a more effective demand for dental service than Las Vegas, because of Belen's higher education and economic level, the ready availability of a multitude of dental services in nearby Albuquerque and the services of two dentists in Belen, and because it had a lesser percentage of those with possible cultural and language barriers. The effective demand for dental services in Belen, however, was only 24 per cent of that of Las Vegas.

Subjective impressions of people acquainted with regions with fluoridated water in New Mexico lend support to the thesis that there is less demand for dental services in a region with fluoridated water than in a region deficient in fluoride. New Mexico dentists practicing in regions with fluoridated water state that frequently they will not see a patient until he is in his twenties or thirties, and then only because a tooth is loose or aching. This thesis is also borne out by the impressions of the professional people connected with the Division of Dental Health.

At least 63 per cent of New Mexico's population is served by community water supplies having almost the optimum or too much fluoride. Only 8 per cent of the population served by community water supplies is not drinking at least an optimum amount of fluoride in those water supplies.

For every three dentists needed in New Mexico, four would be needed in another region with the same population density.

Division of Dental Health, Department of Public Health, P.O. Box 711, Santa Fe, N.M.

Urinary fluoride excretion in preschool children using a stannous fluoride-containing dentifrice in a natural fluoride area

Richard Schweinsberger and Joseph C. Muhler. *Internat.A.D.Res.Preprinted Abs.* 7 March 21, 1957

A possibility exists that the use by young children of a dentifrice containing fluoride in an area where the water contains an optimal amount of fluoride may increase the level of fluoride in the blood to such a degree that an increased incidence of mottled enamel may result.

To learn more about this problem, a study was conducted in Greenfield, Ind., where the water has a natural fluoride content of 1.10 ppm. The study was divided into three parts. In the first

part, the entire group of 60 boys, two to five years old, used a control dentifrice containing no fluoride for six weeks. The group was then divided into two equal parts; for ten more weeks one group continued to use the control dentifrice and the second group used a stannous fluoride dentifrice with 1,000 ppm fluoride. In the third part of the study, both groups used the control dentifrice. Urinary fluoride was determined biweekly throughout the study.

The results indicate that the use of the stannous fluoride dentifrice was not associated with any increase in the urinary fluoride level of the young children and confirms previously published data obtained in a similar study in a nonfluoride area.

Indiana University, Bloomington, Ind.

Relative abrasiveness of natural and synthetic toothbrush bristles on cementum and dentin

R. S. Manly and Finn Brudevold.
J.A.D.A. 55:779-780 Dec. 1957

The abrasive action of natural, hard bristle brushes, hard nylon brushes and medium nylon brushes was compared, both with and without the use of dentifrice abrasive, utilizing the method described by Manly (1941).

The result of 96 tests (involving 32 comparisons) showed the mean depth of abrasion on extracted teeth for hard natural bristles to be 1.27 ± 0.60 mm. per 100,000 strokes. For hard nylon bristles the abrasion was essentially the same—1.36 ± 0.71 mm. The mean for the medium nylon bristles was somewhat lower (1.22 ± 0.52 mm.).

Little or no abrasion resulted when the brushing was done without dentifrice abrasive.

The abrasive action of toothbrush bristles on human dentin is independent of the usual range of stiffness or composition of bristle; it appears to depend almost entirely on the properties of the dentifrice abrasive that is used with the toothbrush.

Tufts University Dental School, Boston, Mass.

Preliminary report on the experiment with fluoridation of drinking water in Norrköping, Sweden (Kurzer Bericht über den Versuch der Fluoridierung des Trinkwassers in Norrköping, Schweden)

Allan Melander. *Odont.Revy* 8:57-72 Jan. 1, 1957

In 1951, the city government of Norrköping decided to institute fluoridation of drinking water on an experimental basis.

Since February 1952, about one third of the population of Norrköping has consumed fluoridated water, thereby serving as an experimental group and the other two thirds as a control group. In this manner the caries-inhibiting effect of fluoride was studied.

In 1955, and again in 1956, the teeth of children in the age groups between 8 and 11 years were examined. Similar examinations were carried out to study the tooth condition in juveniles of the 15 to 18 year age group.

Preliminary results of clinical and roentgenographic examinations now are available.

In 1955, three years after fluoridation was introduced, the caries incidence in children of the experimental group was significantly decreased, the DMF and def indexes being between 30.1 and 30.6 per cent lower than in the control group. In anterior upper teeth, the rate was 62.1 per cent lower.

In 1956, after four years of fluoridation, in 9 to 11 year old children of the experimental group, the def rates were lower by 40.2 per cent (deciduous teeth), the DMF rates by 51 per cent (permanent teeth). The number of intact first molars in the experimental group was 53 per cent higher than in the control group.

In working juveniles, no significant decrease in caries incidence was observed, probably because in this group changes of residence or place of employment from a fluoridated district to another quarter of the city occurred frequently.

The caries incidence in adults was not affected by fluoridation to an appreciable degree.

Almänna Sjukhuset, Malmö, Sweden

Oral surgery

Incisions and sutures in oral surgery
(Incisions et sutures en chirurgie bucco-dentaire)

Guy Buisson. *Rev.franç.odontostomat.* 4:717-730 June-July 1957

The use of continuous sutures in oral surgery is especially advantageous to obtain temporary or permanent closure of mucous membrane flaps in intraoral surgical procedures such as elimination of impacted teeth (third molars), removal of cysts or extraction of tooth roots. In such operations, there are the following possibilities: (1) closure of the flaps by sutures; (2) leaving the wound open to heal, and (3) drainage of the wound.

Primary closure with black threads, preferably nylon no. 00 for easier visualization at the time the sutures have to be removed, is the method of choice. Previously raised objections to the use of this technic were the risk of postoperative hemorrhage and of infection. Today, however, with adequate hemostasis and the use of antibiotics, these objections can be discarded.

The use of sutures decreases postoperative pain and discomfort and simplifies postoperative care. Usually, only two postoperative visits are necessary, the first two days after the operation to observe the course of the healing process, and the second after one week to remove the sutures. The blood coagulation, which is the most important factor in the healing process, is promoted and protected. Injury to tissue is greatly minimized.

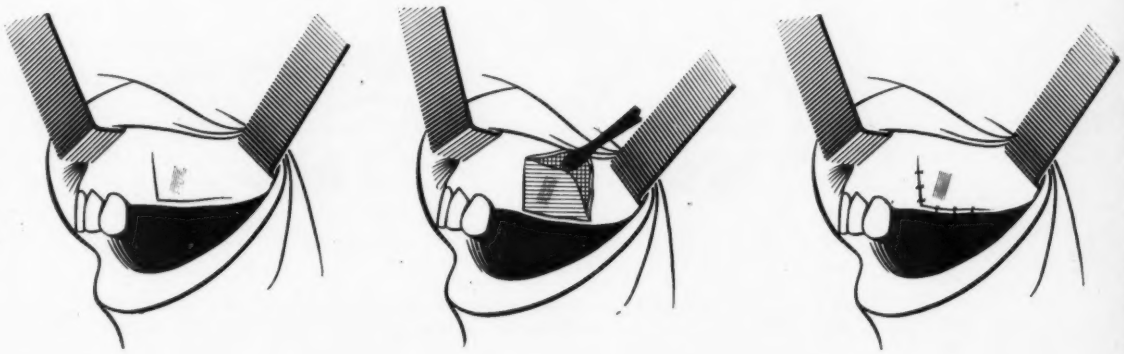
Figure 1 The "classic" incision

The intraoral incisions must: (1) provide optimal accessibility and visibility of the entire operative region, and (2) permit a favorable closure, repair and suturing after conclusion of the surgical intervention.

The advantage of immediate sutures, resting on strong and healthy osseous structures, is such that this technic should be advocated as a routine procedure.

The method of direct intraoral or extraoral incision is still commonly utilized in France, less frequently in the United States, but it does

Figure 2 The angular flap incision. Left: Design of incision. Center: Opening of the flap. Right: Closure of the flap



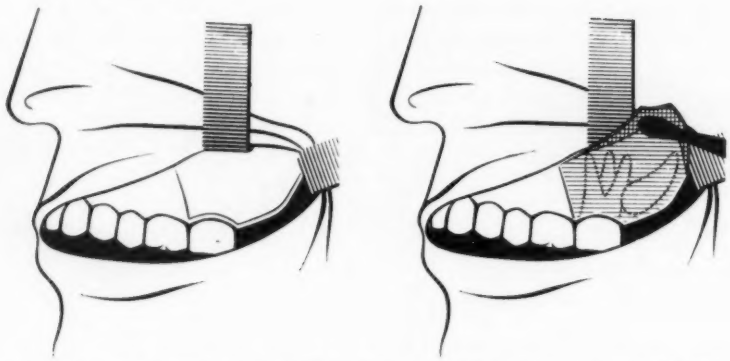


Figure 3 The angular flap incision used for removal of an impacted third molar. Left: Line of incision. Right: The angular flap exposing the operative region

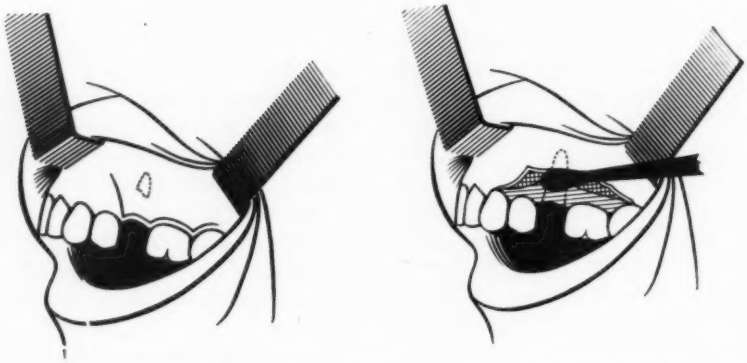


Figure 4 The angular flap incision used for elimination of a root. Left: Line of incision. Right: The angular flap exposing the root

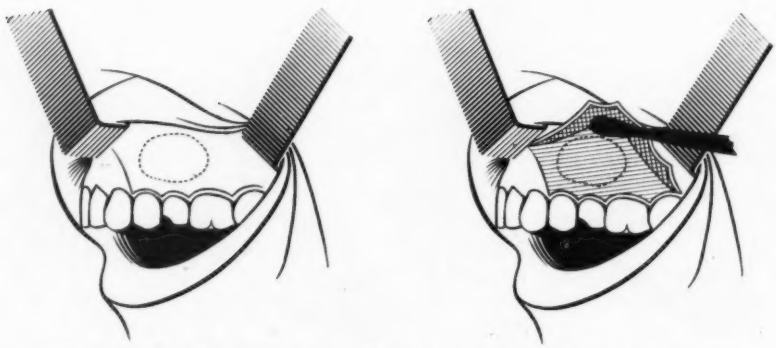


Figure 5 The angular flap incision used for removal of cysts. Left: Line of incision. Right: The angular flap exposing the site of the cyst

not fulfill adequately the requirement of successful oral surgery.

Incisions producing angular flaps of which one side is constituted by the gingival festoon being exposed, obtain satisfactory results in the majority of instances. This technic permits ready suturing of the flaps and comfortable postoperative healing. The other side of the angular flaps is positioned at an acute angle (plus or minus 90 degrees) from the gingival festoon.

This type of incision can be adapted for use in almost all oral surgical procedures in which the formation of a flap is indicated.

85, Boulevard Malesherbes, Paris 8, France

Ankylosis of the temporomandibular joint

Ibrahim K. Dagher and Joseph J. McDonald. *Oral Surg.,Oral Med.& Oral Path.* 10:1145-1155 Nov. 1957

Ankylosis of the temporomandibular joint usually is the result of arthritis that leads to fibrous or bony ankylosis. Because of the stunted growth of the mandible and atrophy of disuse of the muscles of mastication, ankylosis leads to deformities of the face.

The primary objective in treatment is restoration of mandibular mobility. Although the local use of hydrocortisone and hyaluronidase has been advocated, surgical intervention remains the treatment of choice. In the nine cases on which this report is based, the condyloid process and a portion of the neck of the mandible were resected.

The hair over the temporal and posterior auricular region is shaved for a distance of about 5 cm. The patient is given a general anesthetic and a nasotracheal tube is introduced. The operative field is cleansed and disinfected, and the external auditory meatus is packed with a dry gauze. An incision 4 cm. long is made in the preauricular area extending from the level of the tragus upward along the hairline. The incision is deepened through the skin and subcutaneous tissues. Hemostasis is secured by means of no. 00000 white silk.

The root of the zygoma is identified and the ankylosed joint is exposed by detaching and retracting part of the origin of the masseter muscle. The root of the zygoma is chiseled off, thus exposing the condyloid process which is freed and chiseled off, and the neck of the mandible is cut with a rongeur forceps until a distance of about 2 cm. exists between the mandibular fossa and the neck of the mandible. In some instances, a muscle flap or the thickened joint capsule is sutured to intervene between the resected bone ends. A rubber tissue drain is usually left in the operative field and allowed to come out from the upper end of the incision.

The subcutaneous tissues are brought together with interrupted inverted no. 00000 silk sutures. The skin edges are sutured with interrupted no. 0000 nylon. A pressure dressing is maintained in place with an elastic bandage.

Postoperatively, the administration of antibiotics is recommended. After recovery from anesthesia, the patient is allowed fluids by mouth. On the third postoperative day he is allowed chewing gum to encourage movement of the jaw. The drain is withdrawn on the first postoperative day, the skin sutures are removed on the fourth, and on the fifth postoperative day the patient is ready to go home and to eat a regular diet.

In eight of the nine patients, the results were satisfactory. The operation is recommended even at an early age.

American University Hospital, Beirut, Lebanon

Apparatus for external elastic traction of mandibular fractures and subsequent fixation (Apparat dlia vnerotovogo elasticheskogo vytiasheniia otlomkov nishnei cheliusti i posleduiushchei fiksatcii ikh)

U. I. Bernadskii. *Stomat.,Moscow* 36:40-41 March-April 1957

The most widely employed methods of treating mandibular fractures, such as individual wire splints and extraoral skeletal traction by means of blocks, have many limitations.

In 1954 a new standard apparatus was introduced. It consists of two vulsella forceps, applied to the lower border of the mandibular body, and a transverse connecting bar secured with screws. By adjusting the screws traction can be achieved

in the necessary directions. The claws of the forceps are inserted through stab incisions, under anesthesia. The releasing of the claws is not painful and may be done without anesthesia.

This apparatus is recommended for treating recent as well as old mandibular fractures. It is especially indicated in mandibular fractures in children. In bilateral fractures two apparatuses should be used. After replacement of the fractured bones the apparatus can be screwed easily into position, to provide a firm fixation.

The best results have been obtained in treating fractures of edentulous mandibles.

Medghis, Petrovka 12, Moscow, U.S.S.R.

Use of implants made of chromium-cobalt-molybdenum alloys
(Implants alloplastiques bucco-maxillaires)

Silvio Palazzi. *Rev.franç.odontostomat.* 4:19-21 Jan. 1957

At the Dental Institute of the University of Pavia, Italy, during the last three years implants made of chromium-cobalt-molybdenum alloys have been inserted into the alveolar bones of 1,300 patients.

The object of this report is to demonstrate the value of these alloys as implant materials, particularly in regard to their lightness, strength, workability and durability, as well as resistance to corrosion.

In the great majority of instances, the soft tissues adjacent to the inserted implant have completely grown together to form a fibrous covering. No unfavorable tissue reaction was observed. There were neither inflammatory changes, edema nor signs of corrosion present.

Although many reports on the use of implants made of tantalum, titanium or stainless steel have appeared in recent dental literature, the author, on the basis of favorable experience at the Italian clinic, emphasizes his preference for the use of implants made of chromium-cobalt-molybdenum alloys (Vitallium) especially from the histopathologic point of view.

Corso Italia 49, Milano, Italy

Increased growth of jaws in children, associated with hemangioma on the facial skin
(Riesenwuchs kindlicher Kiefer beim sogenannten planen Hämangiom der Gesichtshaut)

R. K. Stellmach. *Zahnärztl.Praxis* 8:2-3 Oct. 15, 1957

Hemangiomas may occur in the region of the face, the lips, the oral mucosa and the tongue but rarely on the palate or the pharynx. In infants and children, these usually benign tumors vary in size and develop proportionally with the growth of the surrounding tissues, although increases in the dimension of the neoplasms, jaws, lips or the tongue, probably accelerated by inherited factors, trauma or inflammation, have been observed.

At the West German Dental Clinic of the Medical Academy of Düsseldorf, Germany, two children with facial hemangioma were observed in whom the condition was clearly associated with macrognathia, magroglossia and premature tooth eruption.

Case 1. The patient, a four year old boy, showed the characteristic symptom of hemangioma on the facial skin, associated with an enormous increase in growth of the jaws, especially of the mandible. One lower second molar had erupted prematurely and appeared normally developed.

Case 2. The patient, a six year old boy, had a hemangioma hypertrophicum cutis on the cheek. The upper jaw was enlarged immensely and an upper permanent incisor had erupted prematurely.

Besides surgical removal of the tumor, treatment in both instances consisted of extraction of the prematurely erupted teeth, correction of functional disturbances and reduction of the abnormally increased parts (jaws, tongue and cheek).

Final correction by plastic surgery is intended after the period of growth and development is completed. Interstitial irradiation with radon pearls will be attempted after plastic surgery.

Himmelgeisterstrasse 152, Düsseldorf, Germany

Orthodontics

Restoration of space for second bicuspid eruption

William G. Goodale. *Bul.New Jersey Soc.Den.Children* 6:4-6 Oct. 1957

Space for eruption of the second bicuspid frequently is lost after premature loss of the second deciduous molar, or as a result of ectopic eruption of the first permanent molar. Space for eruption then must be re-established through the use of an appliance.

Movement of the first permanent molar during the process of space closure is primarily one of mesial tipping, rather than bodily movement. The problem facing the dentist is one of restoring the molar to its correct vertical position. This can be achieved through banding the molar and moving it with a fixed orthodontic appliance, but it also can be achieved by the use of one of several acrylic appliances. As the appliances are removable, the cooperation of the child must be secured in order to obtain the desired results.

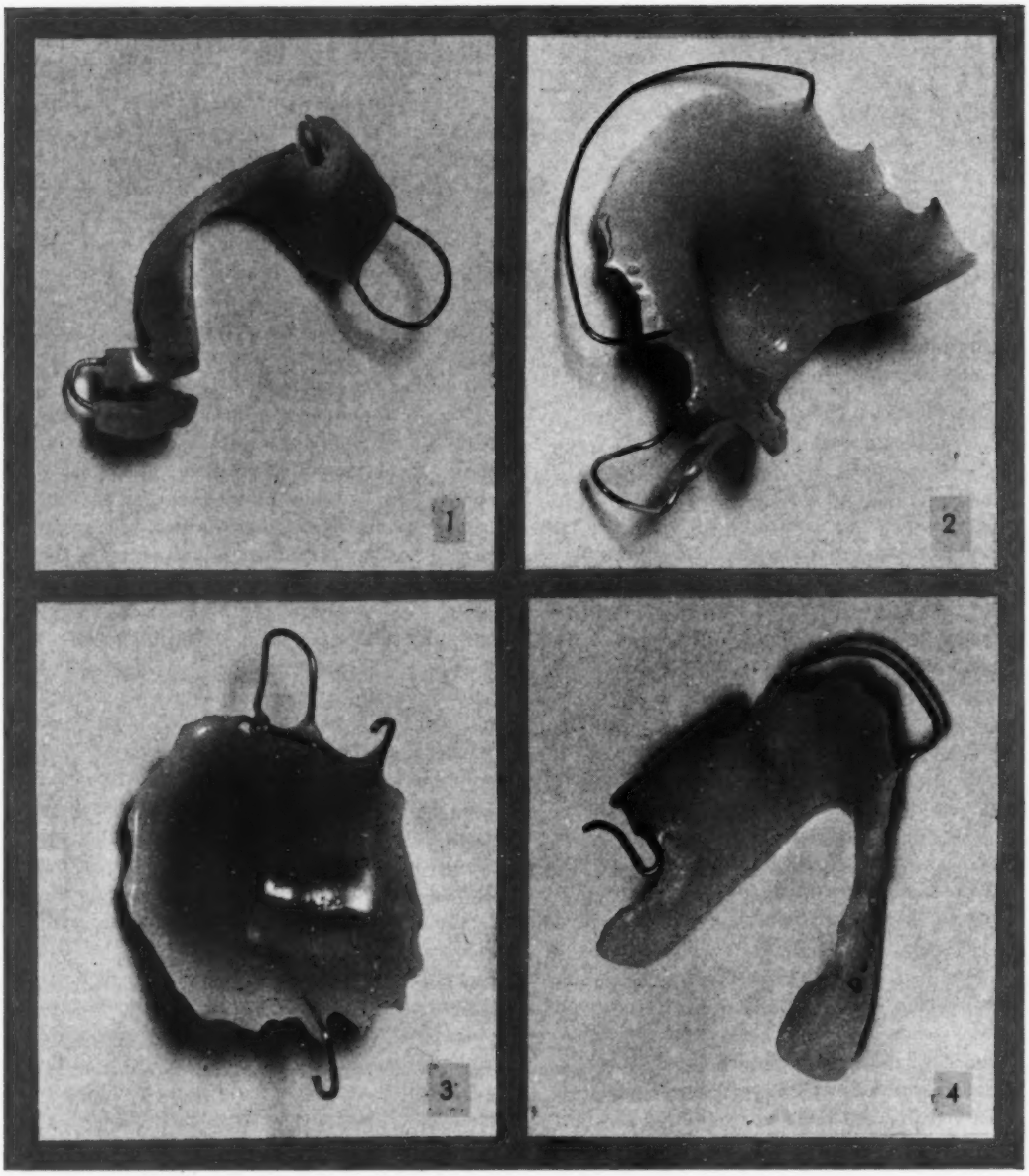
The free-end loop-spring space regainer utilizes a labial arch wire for stability and retention, with a back-action loop spring constructed of no. .025 wire. The base of the appliance is made of acrylic resin. Movement of the permanent molar is achieved by activating the free end of the wire loop at certain intervals of time. A light force on the tooth to be moved is desired. The appliance should be checked and adjusted as often as necessary to maintain the light force on the molar. The type of loop-spring wire can be changed to fit any situation, depending on the position of the tooth and the distance it needs to be moved.

A free-end loop space regainer for the lower arch has a shorter wire loop, resulting in less distortion when the child inserts the appliance.

The split-block space regainer differs from the free-end spring type in that the functional part of the appliance consists of an acrylic block that is split buccolingually and joined by no. .025 wire in the form of a buccal and a lingual loop. The appliance is activated by periodic spreading of the loops. The activator block is split with a disk after the appliance has been processed. The activator portion of the split-block appliance is essentially the same as one that has been designed to establish space for fixed bridge therapy. The unilateral type used for adults should not be used in the child's mouth, however, because of the risks of loss or swallowing.

The fixed, loop-spring space regainer differs from the other types of space regainers only in the design of the spring activation. This appliance resists breakage and provides a satisfactory method of moving the molar distally. The mesial portion of the spring loop is embedded in the resin and passed out through the edentulous space. This portion of the wire should contact the distal surface of the tooth which is mesial to the space. This prevents distal movement of this tooth. A loop is then formed and the wire returned back to contact the mesial surface of the first permanent molar. At this end, the wire is bent around a staple embedded in the resin. The spring loop should be allowed to move freely on the staple. Retention of this appliance is gained by the use of wire clasps. Orthodontic wire of no. .025 or no. .030 dimension is embedded in the acrylic resin, brought through the embrasure and then bent down to contact the teeth below the contact points. After the desired movement of the permanent molar has been attained, the appliance may be used as a space maintainer by soldering the activator portion of the spring to the guide wire in its passive position, or by filling in the edentulous region with additional resin.

The use of self-curing acrylic resin in these appliances eliminates flasking procedures. The cast is first coated with a separating material of choice and allowed to dry. The springs and clasps then are placed in position and the acrylic base is built to the desired contour by alternate applications of monomer and polymer. An excess of monomer should be used to prevent its evaporation from the surface until the resin has completed its initial polymerization. The cast is then



1 Split-block space regainer

2 Free-end loop space regainer

3 Fixed loop-spring space regainer

4 Free-end loop space regainer

placed in water for at least a half hour. Overnight setting is preferred.

Many of the problems of space loss can be treated by the use of these acrylic space regainers. The appliance can be fabricated in the dental office or dental laboratory. The service to the child patient is of great value.

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Aims and methods of treatment in the deciduous dentition

Edward A. Cheney. *Am.J.Orthodont.* 43:721-742 Oct. 1957

Small amounts of orthodontic therapy and supervision of the deciduous dentition can contribute extensively to the development of healthy and functional dentitions.

An important objective of orthodontic therapy during the period of the deciduous dentition is the management of the local, or extrinsic, factors which modify growth at this stage. These local factors can unbalance the sequence of normal occlusal development, and can intensify and complicate deep-seated malocclusions. Postponement of treatment of a functional malocclusion intensifies the trauma to and asymmetry of the growing structures. The alveolar bone follows the teeth in their abnormal development. As growth proceeds, the abnormality becomes more extensive. Later, treatment is less satisfactory. Often, permanent retention becomes a necessity after basal and alveolar bone growth has slowed or stopped.

In three reported cases, treatment of the deciduous dentition to eliminate a functional shift of the mandible took only 30 minutes of explanation and habit training. Treatment of the mixed dentition required six months with a lingual arch and minor occlusal equilibration. Treatment of the permanent dentition required 21 months of complicated appliance therapy and extensive occlusal balancing, yet the results were far less desirable. Functional cross-bites and locked occlusions should be corrected as early as possible in the developing dentition.

Generally, deciduous irregularities with no influence on the long-time growth and development are not treated. If there is a functional mandibular shift associated with a malocclusion, treatment should be undertaken to remove the shift. If there is no functional shift of the mandible in connection with the dental irregularity, immediate treatment of cross-bites and locked occlusions is not indicated; in all probability, the irregularity will disappear with the exfoliation of the deciduous teeth and the succeeding permanent teeth will erupt into correct occlusion.

A second important objective in treating the deciduous dentition is the adjustment of the deciduous dental arches on their supporting apical bases to establish balanced occlusion. When proper occlusal balance can be established at this stage of development, there is good opportunity in the borderline deep-seated malocclusions for subsequent growth and development to result in an acceptable permanent dentition. Those problems which are deferred to a later stage of dentofacial growth become more deep-seated. Often, they are difficult to treat and require more appliances; they also lack the inherent stability of a dentition which has been directed into a proper occlusion.

The usefulness of arch expansion is doubtful. Arch expansion is not reasonable in patients with moderate or extensive crowding of incisors. In some borderline conditions, expansion of the deciduous dental arch may be of value in that it could direct tooth position and subsequent alveolar bone growth.

Much of the early crowding of lower incisors can be relieved by the movement of these teeth distally as the deciduous cuspids and molars exfoliate. Arch expansion appears to be of little value in aiding this type of developmental change. There is little evidence available at the time of the deciduous dentition to aid in deciding whether deciduous arch expansion will contribute to permanent incisor alignment. On the other hand, the possibilities of adjusting the deciduous dental arches mesially or distally with regard to influencing the permanent dentition are more attractive.

Bank of Lansing Building, Lansing, Mich.

Education

The dental research grants and fellowships program of the Public Health Service

Francis A. Arnold, Jr. *J.D.Educ.* 21:330-336 Nov. 1957

The National Institute of Dental Research was established June 24, 1948. The Institute's intramural program is conducted at Bethesda, Maryland. Its extramural program consists of grants-in-aid to nonfederal institutions and individuals, and is an integral part of a broad Public Health Service program administered by the National Institutes of Health. Its objective is to improve the nation's health by the addition of new knowledge and personnel in the health sciences, and to expand and utilize the research potential in the nation's universities, hospitals, laboratories and other public and private institutions.

The basic philosophy guiding the administration of all these grant programs is the necessity for safeguarding the scientific freedom of the research worker. The grantee makes his own proposal as to his problem and the manner in which he desires to approach it. His project, however, must be sponsored by his institution which must agree to provide him space and facilities. He is at liberty to change his research plans without prior approval if, during the course of his research, other avenues of approach seem more promising. The grant funds are administered by and in accordance with the policy of the grantee-institution, with title to almost all equipment purchased with grant funds vested in the institution.

Equal opportunity for applicants for these grants and awards is afforded. Initial review is given by groups of technically qualified consultants comprising specialized study sections. Members of these groups are nongovernmental consultants selected by the Surgeon General on a nationwide basis, with liaison scientists from other federal agencies interested in health research. They consider the qualifications of the applicant and the scientific merit of his proposal, and make recommendations to the National Advisory Dental Research Council. The council, composed of recognized leaders in the various fields of dental science and public health, makes recommendations to the Surgeon General relative to activating the grants. The Surgeon General may not award a grant unless it has been approved by one of the councils.

The fellowship program of the N.I.D.R. is directed toward encouraging and assisting the most promising students to enter the field of dental research or teaching. Awards are made available to U.S. citizens in the following five categories:

1. Dental student part-time fellowship grants: These are grants awarded to the deans of approved dental schools to provide for part-time research work during the school term or full-time research for up to two months during a period when class work is not scheduled for the student. Dental schools may request up to six units of $400 each, plus 8 per cent overhead for administrative purposes. The school selects the students to be supported.

2. Predoctoral research fellowships: These are awards to qualified persons who are expected to carry on studies oriented toward graduate training in fields related to the dental health sciences. The basic stipend is $1,400 for the first year with an increase of $200 for the intermediate and final years.

3. Postdoctoral research fellowships: These are awarded qualified persons who desire additional training for careers in research or teaching. The stipend is $3,400 a year, plus $350 for each dependent.

4. Special research fellowships: These are available to scientists with a doctoral degree, or the equivalent, who have demonstrated unusual competence in research or who require special training for a specific problem. Stipends vary.

5. Senior research fellowships: These are intended to foster additional research in the preclinical sciences. The awards provide salary for the fellow, not to exceed $10,000, partial research expenses not to exceed $2,000, and indirect costs.

The objective of the training grants program is to train individuals for academic teaching and research careers related to the various fields of dental science. Dental schools may apply for training grants in order to establish, expand or improve their training facilities in the clinical and basic science areas.

The Health Research Facilities Act of 1956 was passed to assist in the financing of construction of facilities for research in the sciences related to health. The assistance is in the form of grants-in-aid to public and nonprofit institutions on a share basis of not to exceed 50 per cent for construction of needed research facilities.

Inquiries relating to these programs should be addressed to the author or to Dr. Lyman at the National Institute of Dental Research, Bethesda 14, Md.

National Institute of Dental Research, Bethesda 14, Md.

Dental education today and tomorrow

G. R. Lundquist. *J.A.D.A.* 55:698-699 Nov. 1957

Dental education for the past 40 years has not been broadened sufficiently to include periodontics and endodontics in the curriculum on the basis of their worth. The dental student concentrates most of his time and attention on operative and prosthetic dentistry, with the result that these are the forms of dentistry largely practiced by the general practitioner today. This is unfortunate.

Today's educational programs in many instances develop dentists who think in terms of what should be done to individual teeth, instead of considering how the existing pathologic condition relates to the health of the entire mouth and to the general health of the patient. The tendency to glorify oral surgery, particularly exodontics, has influenced dentists to underestimate the treatment possibilities which modern endodontics and periodontics place at their disposal.

Dental diagnostic clinics and examining rooms should be headed by a qualified oral pathologist who could evaluate treatment possibilities in terms of periodontics, operative dentistry, endodontics and prosthetic dentistry as they relate to functional factors of occlusion in harmony with the temporomandibular joint requirements.

If the dental profession is to progress beyond the stage of specializing in restorative dentistry, it must give as much time to preventing the loss of teeth as it now gives to the fabrication of their replacement. The knowledge is available in the fields of periodontics and endodontics. It must be incorporated in the teaching programs.

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National homage to dental surgeons

(El homenaje nacional al cirujano-dentista)

G. Ruiz Buitrago. *Rev. espan.estomat.* 5:203-207 May–June 1957

National homage was paid dentists who received the diploma of dental surgeon the first time this diploma was issued in Spain at the University of Madrid School of Stomatology on May 4, 1957. The event was organized by the Faculty of the School of Stomatology and the General Council of the Association of Odontology and Stomatology. It consisted of a solemn mass, a literary meeting, the conferring of honorary titles and medals to those who were being honored, the unveiling of a memorial bust and a banquet.

The mass was said at 11 A.M. at the Santa Apollonia Chapel of the School of Stomatology. The literary meeting was held in the assembly hall of the school. It was chaired by Dr. J. Garcia Orcoyen, dean of the Faculty of Medicine at the University of Madrid. All the dental surgeons who were being honored or their representatives, as well as the representatives of the Ambassador of Cuba, public officials, the dental surgeons, and the sons of the dental surgeons as separate groups, attended the meeting.

The history of the development of odontology and stomatology in Spain was reviewed in the speeches. The diploma of dental surgeon was issued to dentists on their graduation for the first time on July 4, 1875, whereas the diploma of odontologist and stomatologist was issued for the first time in 1907 and on Aug. 4, 1944, respectively.

It was through the efforts of the late Drs. C. Trivino Portillo and F. Aguilar that odontology became a medical profession and stomatology a specialty of medicine. Dr. Aguilar became head

of the Department of Odontology of the Faculty of Medicine of the University of Madrid in 1890. Through his efforts the School of Odontology was created in 1913 and later formed part of the University City of Madrid.

After the speeches were delivered, the dean of the Faculty of Medicine presented the dental surgeons, who were being honored, with honorary diplomas and medals. A memorial bust of Dr. Aguilar was unveiled. Later a banquet was held.

Present status of student government in United States dental schools

Seymour L. Gottlieb. *J.D.Educ.* 21:337-342 Nov. 1957

A questionnaire was distributed to representative students at all 43 accredited dental schools in the United States. All dental schools but one have student class officers. Dental student councils exist at 39 of the schools (91 per cent). The council is an independent governing body with its own constitution and bylaws. One meeting each month is regularly scheduled, but additional sessions may be called as the need arises. Programs supported by dental student councils include student emergency loan funds, the publication of a journal or newspaper, and recognition to outstanding faculty members through "Golden Apple" awards.

Thirty-five per cent of the dental student councils reported outstanding cooperation with the faculty; 47 per cent said cooperation was good but fluctuated with the proposals; at 18 per cent of the schools only a fair number of student council suggestions was upheld by the faculty.

Most frequently the class president represents his class and discusses problems with staff members; also, frequently executive committee conferences are held with the dean at regular intervals.

More than 60 per cent of the schools reported holding one or more dances each year. At a third of the schools, athletic events were used as a means of informal gatherings. These activities included faculty-student picnics, senior and faculty outings, bowling leagues and softball teams. A quarter of the schools indicated that faculty members frequently are invited to fraternity functions.

Four schools function exclusively with honor systems; four schools use a combination of proctoring and honor systems, and all other schools use proctors during examinations.

Sixty per cent of the schools report that no opportunity is available for responsible student representatives to be consulted or to participate on an advisory committee considering adjustments or evaluations of the school's curriculum.

Alumni organizations have been established at 75 per cent of the schools, but students at half of these schools said the alumni were inactive. Eighteen per cent of the dental schools have no alumni organizations.

It is evident that a gap exists at many schools between faculty, alumni and dental students in relation to their activities. Many seniors graduate with a negative attitude and freshmen become disillusioned early, leading to an apathetic group of alumni.

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The hospital contribution to dental education

E. M. Bluestone. *New York J.Den.* 27:338-341 Nov. 1957

The educational possibilities of the general hospital with relation to dentistry are increasing. No hospital now can stultify itself by the exclusion of dental service. The dentist as a potential teacher must be assigned a place on the attending staff of the hospital comparable to the place long ago provided for his nondental colleague.

The educational relationship between hospital and dentist should be planned along the following principles:

1. The educational function of the hospital should be broadened to include the student of dentistry at all stages of his development. Dentistry offers to the medical specialties what they now offer to each other. The dentist should not permit himself to be classified as a less vital personality who can be relegated to a minor position on the team.

2. The dentist must remember that education exerts a two-way influence which depends more on stimulation and inspiration than on the transmission of factual knowledge. The dentist should participate in clinical conferences, on the medical board, and in the work of scientific committees such as those on education and research.

3. The value of full-time service in certain clinical positions of the hospital holds in all specialties. The chief of dentistry must be available to the student.

4. There is no substitute for the personal teacher, who inspires and stimulates the student to original activity.

5. Hospitals should make budgetary allowances for a good staff of dentist-teachers, the tools which make them successful practitioners, and the space in which to work comfortably.

6. The art of teaching must be applied in support of the science of dentistry in hospitals to the end that this profession will be understood and recognized for its contribution to human welfare. This involves the graduate as well as the undergraduate student.

An educational relationship between the dentist and the hospital will be beneficial to both the dentist and the hospital.

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Why not recruitment?

Bill B. Howard. *Texas D.J.* 75:551-553
Oct. 1957

Technical professions, engineering firms, aircraft companies, athletic coaches, fraternities and civic clubs all are active in seeking out the best possible material in their fields. They don't wait for volunteers, they go out and get them.

No mass effort toward recruitment of dental students is being made anywhere in the United States. Dentistry should attempt to attract outstanding young men and women into the profession. An indoctrination program is necessary to woo those young folks who have not yet chosen a career to consider dental hygiene or dentistry as their career, their profession. Dentistry offers a multitude of facets to entice people who are interested in the arts, in medicine, in engineering. The engineering skill that goes into a perfect prosthesis, the fine art embodied in a denture, the craftsmanship, architectural knowledge, value to humanity, the business aspects, the personal and social relations and prestige all are to be found in dentistry. There are so many outlets for expression in dentistry that almost any intelligent person could be happy in this field.

A program should be undertaken to point out the many facets of dentistry to students with superior scholastic standing graduating from high school.

In Texas, for instance, the valedictorian and salutatorian of each high school class, in every town where there is a dentist, could be invited to visit one of the state's two dental schools. If the town is too far away from the schools, the local dental society could pay for the trip. If the schools are near, a dentist could act as host for the day to one student, drive him to the school, and spend the day extolling the virtues of the profession. The role of host could be rotated every year.

The public relations committee of each district dental society could designate the high schools, select the hosts and recommend an agenda and schedule. The host dentist might obtain a list of the student's activities, accomplishments and awards. The committee could write the deans of the schools asking the most convenient time for visitors. The committee could do all the correspondence work, including a letter to the student's parents outlining the plan and object of the trip, and asking for permission to be host to the child. The dean of the school could assign a senior student to conduct the tour, to answer questions and to make introductions to faculty members and students. A whole day should be devoted to the project. The host dentist also might show the student through his own office either before or after the trip to the dental school.

3707 Gaston Avenue, Dallas 10, Texas

Prosthetic dentistry

Mouthpieces for the handicapped

Robert R. Buckley. *J.Den.Children* 24:174-178 Sept. 1957

In Indiana alone are at least 1,000 handicapped individuals who could profitably use a mouthpiece of some type to assist in the operation of electric wheel chairs, typewriters and other devices. Included in this group are patients with poliomyelitis, spinal nerve injuries and cerebral palsy.

Workers at the Cerebral Palsy Center and the School of Dentistry of Indiana University have been conducting studies over the past two years to develop a device which would eliminate most of the undesirable properties of other mouthpieces. A method of constructing a satisfactory mouthpiece has been developed.

The methyl methacrylate mouthpiece covers the clinical crowns of all the teeth. It has an anterior extension with a hole in the center to hold a straw or pencil. About three visits to the dentist are required for its construction.

Alginate impressions of the patient's upper and lower dental arches are taken along with a wax bite. Stone models of the teeth (Fig. 1) are prepared and mounted in centric relation on an acceptable dental articulator (Fig. 2). Baseplate material is adapted to cover the clinical crowns of the teeth in each arch, the coverage being extended onto the retromolar region (Fig. 3). Since any undercuts will prevent easy withdrawal of the tray, the baseplate should be rather loosely adapted. The two trays are waxed together into one solid piece, and the buccal contour is built out to provide bulk. The lingual surface is concave to provide tongue room. The guide pin on the articulator should be raised not more than 1 or 2 mm., since the finished mouthpiece should encroach on the freeway space as little as possible (Fig. 4). It should be possible to remove the mouthpiece from either arch without interference. An anterior extension of solid wax is added to the mouthpiece and is directed downward at about a 45 degree angle (Fig. 5). The aim should be to create a comfortable typing position with the head erect. The diameter of the extension should be reduced to permit nearly complete closure of the lips. The extension should be shortened considerably if a straw is to be used by the patient. The wax model may be tried in the patient's mouth on the second visit to the dentist.

The wax model is invested in a denture flask from which the wax is eliminated. The mold is filled with heat-curing methyl methacrylate which is processed and removed from the flask. The mouthpiece may be fitted after it is polished to a high luster. With an acrylic bur a hole is made in the extension, of sufficient size to hold a pencil; or, the hole may be bored through the mouthpiece to accommodate a straw (Fig. 6). The pencil and straw are held in position by friction (Fig. 7).

The dentist and occupational therapist should examine the mouthpiece frequently to detect regions of impingement that should be corrected to avoid injury to the teeth or supporting tissue. The patient is instructed to store the mouthpiece in water at night. Parents are asked to brush the patient's teeth after each meal.

This mouthpiece has been tested clinically for 24 months on six patients with athetoid cerebral palsy. The mouthpiece has several advantages over other types. It is relatively stable in the mouth, since the patient, as he brings his teeth together, causes the mouthpiece to assume the correct position. There is little or no gagging sensation, no strain on the muscles of mastication, and the patient can relax without losing the mouthpiece. It is comfortable and can be used for long periods of time. The patient can remove and insert the appliance without assistance, and can talk with some clarity while retaining the mouthpiece. The patient can wet his lips with the mouthpiece in position. There is no unpleasant taste, odor or color, and the mouthpiece can be kept clean easily with a denture brush.

A seven year old boy with severe tongue thrust and an open bite was able to reduce his drinking

Figure 1

Figure 2

Figure 3

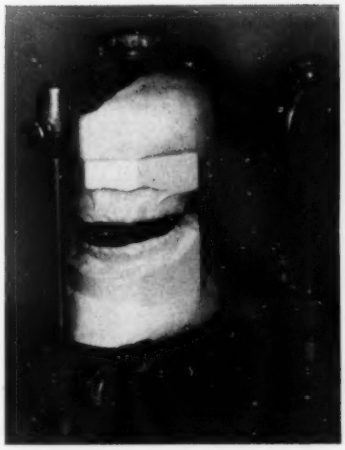

Figure 4

Figure 5

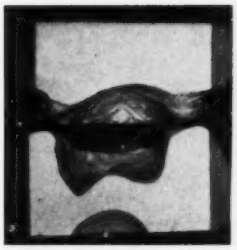

Figure 6

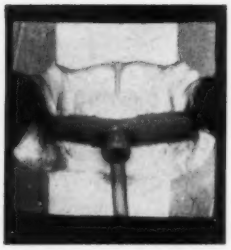

Figure 7

Figure 8

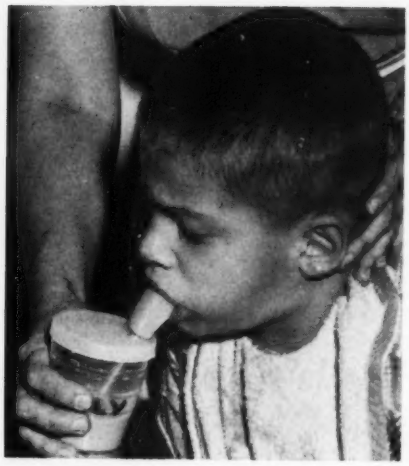

Figure 9

time from 90 minutes to less than 10 minutes with the mouthpiece, and was able to switch from this training aid to a plastic straw within a few days (Fig. 8).

Another patient uses her mouthpiece with an extension to operate an electric wheel chair and typewriter (Fig. 9).

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A comparison of cobalt-chromium alloys and yellow and white gold alloys

W. Johnson. *D.Practitioner* 8:8-12 Sept. 1957

The properties of cobalt-chromium alloys, yellow gold and white gold have been compared. The "white golds" consist of those alloys which have palladium and silver as the chief constituents.

Tests of tensile properties revealed the superiority of the yellow gold alloys, with the cobalt-chromium alloys a good second. White gold alloys were considered unsatisfactory, because of their low limit of proportionality; the danger of distorting a denture, especially the clasps, is great.

The modulus of elasticity of cobalt-chromium alloys is approximately twice that for gold alloys. The practical implication of this lies in clasp design. Twice the degree of undercut can be used with gold as with cobalt-chromium.

The indentation hardness of the white gold alloys in the softened state on the Brinell scale is about 150. For a yellow gold alloy in the softened state it is about 170, in the hardened state, 260. Values for cobalt-chromium alloys range from 270 to 300 for the softer alloys and 300 to 350 for the harder alloys. The indentation hardness should not be confused with abrasion resistance; the abrasion resistance of cobalt-chromium alloys is much greater than that of yellow and white golds, and they resist scratching better. To finish cobalt-chromium alloy castings, special equipment, such as a sand blaster, electropolisher and a high-speed polishing lathe, must be used.

The yellow gold alloys are approximately twice as dense as cobalt-chromium alloys, with the white golds about midway between the other two. Where low weight is a factor, as in an upper denture where retentive factors are poor, cobalt-chromium alloy is the choice. If a heavy baseplate is desired for a complete lower denture, yellow gold is the best material.

All the alloys are reasonably satisfactory in corrosion resistance, with cobalt-chromium alloys the best, yellow gold alloys a close second, and white gold alloys last. White gold alloys tend to tarnish when the oral hygiene is inferior.

Yellow gold alloys are the easiest to melt. White gold alloys have a melting point about 100° C. above that of the yellow gold alloys. The cobalt-chromium alloys present a special problem because of their high melting point relative to the gold alloys.

White and yellow gold alloys can be soldered satisfactorily. Cobalt-chromium alloys, however, present a problem similar to that with stainless steel, because of the chromium oxide coat on the metal. Cobalt-chromium alloys can be soldered, but not as easily or as satisfactorily as gold alloys.

White gold alloys cost less than half as much as yellow gold alloys. The cobalt-chromium alloys are much cheaper, but extra equipment is required to process them; from the economic viewpoint there is little to choose between a gold denture and one of cobalt-chromium.

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Oral lesions and atypical growth of epithelial tissue in patients wearing dentures

(Untersuchung über Prothesenreiz und atypisches Epithelwachstum)

G. Pliess and G. Bornemann.
Fortschr.Kief.Ges.Chir. 3:41-47, 1957

In the pathology department of the Dental Clinic of the University of Hamburg, examination was made of 321 patients who wore dentures and who had complained of sore spots in their mouths.

In 25 instances, an atypical growth of epithelial tissue was observed, which was accompanied by severe irritation and lesion formation in the mucous membrane covering the gingiva, alveolar process and hard and soft tissue.

Histologic examination of specimens obtained by biopsy revealed that in these instances edema,

leukodermia, hyperkeratosis, parakeratosis and acanthosis were present. Although these conditions can be considered precancerous, only in four instances in which the tumorous growth had affected the submucosal regions was malignancy established.

In the other 296 patients only minor inflammations of the oral mucosa were present.

For differential diagnosis, the following possible causes were considered:

1. Biologic factors such as anemia, diabetes, avitaminosis, allergy and neurosis.

2. Physiologic factors such as an insufficient saliva secretion, inadequate thickness of the oral mucosa, presence of residual substances, unerupted or impacted teeth (mainly third molars), embedded roots, swellings due to hypertrophy, unspecified cysts, spontaneous tumors and degenerated tissues.

3. Anatomic factors such as a narrow upper jaw, flat or concave lower jaw, and incisal edges which are neither properly opposed nor parallel positioned.

4. Technical factors such as an excessive pressure exerted on denture-supporting tissues, overextension of denture bases, lack of relief over thin mucosal regions, failure to establish occlusal planes and functional centric occlusion, failure to register functional mandibular movements and occlusal balance, artificial teeth which are not properly arranged or arranged without sufficient overjet, an increase in the degree of overbite after denture insertion, lack of cuspal interdigitation and basal interference in retromolar and tuberosity regions.

Prevention and early detection of carcinogenic oral lesions are the dentist's main weapons in the fight against cancer. He should be able to recognize the possible factors in development of oral cancer and to make thorough examination of precancerous conditions to diagnose malignant alterations as early as possible.

In order to accomplish this, the dentist should carry out the following procedures: (1) complete examination of oral tissues and adjacent structures; (2) detection of abnormal tissue changes; (3) consultation with an oncologist to verify or correct the diagnosis if malignancy is suspected; (4) taking specimens (by biopsy) from tissues showing abnormal growth for pathologic examination; (5) eliminating all irritating factors in the denture and (6) instructing the patient with dentures to appear for periodic oral examinations.

Martinistrasse 52, Hamburg 20, Germany

An evaluation of centric relation records obtained by various techniques

Krishan K. Kapur and A. Albert Yurkstas.
J.Pros.Den. 7:770-786 Nov. 1957

A study was conducted to evaluate the commonly used methods of recording centric relation in complete denture prosthesis. Thirty-one patients were selected at random from the prosthetic clinic of Tufts University School of Dental Medicine. The following three methods were selected for the purpose of the experiment: (1) extraoral tracing procedure (after Stansbery); (2) intraoral tracing procedure (after Hardy) and (3) wax registration procedure (after Hanau).

Three interocclusal records were made by each method for each patient. It was found that the intraoral tracing procedure and the extraoral tracing procedure were more consistent than the wax registration method. In patients with flabby ridges, the intraoral tracing procedure and extraoral tracing procedure became less consistent as compared to their consistencies in patients with good and flat ridges. The consistency of the extraoral tracing procedure did not vary significantly in patients with different types of ridges. The degree of consistency of the intraoral tracing procedure decreased to a significant level in patients with flabby ridges.

The wax method seemed less consistent than the extraoral and intraoral tracing procedures. The wax method showed least consistency on flat ridges and the highest consistency on flabby ridges. The differences in consistency between the intraoral tracing procedure and the extraoral tracing procedure was not statistically significant.

The mean deviation of all three methods ranged from 0.20 to 0.40 mm. This amount is barely perceptible clinically in an edentulous patient.

136 Harrison Avenue, Boston 11, Mass.

Operative dentistry

Role of silver amalgam in a modern dental practice

John H. Mosteller. *J.A.D.A.* 55:335-343 Sept. 1957

Silver amalgam, the most widely used material in operative dentistry, is employed by dentists with all degrees of ability. A survey has revealed a smaller percentage of failures with amalgam fillings than with fillings made of any other material. Amalgam is well tolerated by the pulp and, although it is a good thermal conductor, the pulp can be protected easily from this thermal conductivity by the use of intermediate base materials.

Studies utilizing radioactive calcium (Armstrong and Simon, 1951) indicate that amalgam comes closest to sealing the tooth cavity hermetically. No fluid exchange has been demonstrated at the margins of amalgam fillings that have been in the mouth for any period of time.

Properly manipulated amalgam is a stable material that does not change in size and shape with time. The expansion of silver amalgam is under the control of the dentist; the slight contraction that may occur is of no clinical significance. The flowing characteristic of amalgam appears to have been exaggerated, for no one has demonstrated its clinical significance.

Amalgam has little tensile strength and angle margins as near 90 per cent as possible should be sought. The great compression strength of amalgam (in excess of 50,000 pounds psi) is more than enough to meet the demands of the forces of mastication. Amalgam must be mechanically retained intracoronally; thus, it should be used only for those restorations that are supported by the tooth, not for those where the restoration must strengthen the tooth.

Corrosion, tarnish, and the so-called "amalgam line" all are results of errors committed by the dentist and are not necessarily physical properties of amalgam.

Although a perfunctory technic is responsible for failure with amalgam, it is a relatively easy material to learn to manipulate properly. The use of amalgam in restorative dentistry allows the average dentist to render a quality type of service to a large number of patients at less expense per patient and yet enables the dentist to enjoy an income that compares favorably with that enjoyed when gold inlays are used.

Silver amalgam is not a second-rate filling material, and the fee charged should be commensurate with the service rendered.

104 St. Joseph Street, Mobile, Ala.

The water added technic for dental gold casting

David B. Mahler. *Oregon D.J.* 27:2-6 Oct. 1957

To produce an accurately fitting dental gold casting, the dimensional changes of all the materials involved in the procedure must be compensating in nature; that is, the sum of all expansions must be equal to the sum of all contractions. Those technics requiring high investment setting expansions rely on hygroscopic expansion whereby water coming into intimate contact with the setting investment produces an expansion which is approximately twice that for conditions of normal setting. Although some hygroscopic expansion can be produced by surrounding the setting investment with a wet asbestos liner, in the most favored technics the setting investment is immersed completely in a water bath; the investment absorbs as much water as it has the capacity for, and the resulting expansion is a maximum for the investment and the investing conditions used.

Recently, a new technic has been devised whereby the water to be brought into contact with the setting investment is added in a controlled amount with a graduated syringe or pipet. The basis for the described procedure—known as the water-addition technic—is the fact that the specific amount of water added to a

setting investment results in a specific amount of expansion. The new technic reduces the deleterious effect of manipulative variables. There is excellent reproducibility of expansion exhibited by specific water additions, and the expansion can be varied easily by adding more or less water. The result is a casting fit which exactly suits the operator's desires and personal criteria.

A thin rubber ring is used to surround the investment during the setting procedure. A small metal collar fits into the top of the rubber ring and is inset after the ring is filled with investment to provide a reservoir for the added water. A supporting metal ring prevents the collapse of the rubber ring while vacuum investing, and may be used for regular investing to facilitate the investing procedure; however, this supporting ring must be removed, otherwise investment expansion will be inhibited completely. A syringe can be used to add the specific amounts of water to the setting investment. The equipment is made by two dental supply manufacturers, who also make an investment for this technic. The investment exhibits an extremely high hygroscopic expansion and has sufficient strength to resist casting forces. Conventional investments cannot be used with the water-added technic.

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Practical high speed

John D. Hartness. *S.Carolina D.J.* 15:5-9 Aug. 1957

A common misconception of high-speed dental instruments is that they make one a faster operator. This is true, but the actual cavity preparation consumes only a small amount of the time necessary for restoration. The real significance of high speed is that the operator is much less fatigued while making a more ideal preparation.

Sound enamel can be cut without effort at high speed. Only light pressure, similar to that used when writing with a pen, is necessary. An advantage in not having to use pressure is that the dentist has better control of the handpiece and can cut to any desired point and stop.

The number of instruments required is greatly reduced when operating at high speed. In ordinary operative procedures for porcelain jacket crowns, amalgam and silicate fillings, the author uses only the following burs: no. 2, 4 and 6 round; no. 35 and 37 inverted cone; no. 557 fissure and no. 701 tapered fissure. A no. 557 bur will be used for most of the preparation; with daily use it will usually last for from three to six weeks. The diamond instruments, although efficient at speeds of from 20,000 to 30,000 rpm, are not nearly as efficient as the carbide burs at the higher speed. The carbide bur will cut much faster and easier than the diamond bur at high speeds, and the dentist can maintain sharp line angles with the carbide bur. The diamond instruments, however, are useful in polishing the preparation for the porcelain jacket crowns and inlays.

The only disadvantage to high speed is the noise; if the reason for the noise is explained to the patient, he is not annoyed by it.

Occlusal preparations naturally are the simplest to make. A no. 557 fissure bur can be used, regardless of how much enamel is to be cut. The same bur is used to remove the proximal wall of bicuspids or molars. For small Class V preparations a no. 35 inverted cone is used, for the larger preparations a no. 37 inverted cone. High speed is especially efficient when sound enamel must be penetrated in making mesial or distal preparations on anterior teeth. The no. 2 round bur is used to penetrate, to remove decay and to make the areas of retention.

Although the use of high speed by no means solves all the problems of cavity preparation, it simplifies some of the more difficult aspects. High speeds generally will be accepted and will help to ease the increasing physical demands on the dentist.

204 River Street, Belton, S.C.

Effects of inhalation of airbrasive powder

Donald A. Kerr, Sigurd Ramfjord and Greta Grape-Ramfjord. *J.D.Res.* 36:721-731 Oct. 1957

Reports expressing a wide variation of opinions as to the effect of the inhalation of alumina dust have appeared. Because inhalation of any dust, especially one containing silica, may cause pneumoconiosis and because of the conflicting reports on the effect of alumina dust and the presence of

silica in the air abrasive powder, the effects on animals of the inhalation of air abrasive powder were studied. Air abrasive powder was introduced into the lungs of animals by a described dusting technic. Dust studies were made in two dental offices to determine the concentration of air abrasive dust to which the dentist would be subjected.

All animals showed some reaction to the inhalation of air abrasive material. Those exposed to large quantities developed pulmonary symptoms. A large number of animals died after the dusting period. All animals exhibited some dust in the lungs, the amount depending on the length of exposure time and the type of animal. Rodents appear to be more resistant to the accumulation of dust than are monkeys. Air abrasive powder is toxic when inhaled in large quantities. The changes are slow to develop, however, and are not as severe as those produced by other dusts such as silica.

The dust concentration studies in dental offices indicate a low concentration of dust which is below the level considered effective in producing pneumoconiosis, even for dusts containing silica. It therefore appears that the use of the air abrasive technic is not a hazard to the dentist or to the public.

The following conclusions were reached:

1. Monkeys are the animals of choice for studies on the effect of dust inhalation, because their respiratory system is anatomically similar to that of man and because monkeys appear to be naturally susceptible to respiratory disease.

2. Air abrasive dust in large quantities can produce pulmonary changes which result in a reduced vital capacity.

3. The changes produced are not fibrotic. They are diffuse rather than nodular and are difficult to produce even with intensive exposure. This would indicate that the material has a low degree of toxicity, even though it can be demonstrated in the lungs in large quantities.

4. Because of the periodic slight exposure obtained by both dentist and patients to a low concentration of dust, the air abrasive technic presents no health hazard.

5. All particles smaller than 3 to 5 microns should be removed from the air abrasive powder.

6. Although the quantity of silicate in the powder is small, it would be desirable to have the air abrasive powder free of silica.

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Periodontics

Experimentally produced marginal periodontal defects and subsequent reattachment of root cementum
(Experimentelle Studien über Wurzelzementregeneration bei marginalen parodontalen Defekten)

Hilding Björn. *Deut.zahnärztl.Zschr.* 12:480-484 March 15, 1957

At the Royal Dental School in Malmö, Sweden, marginal periodontal defects were produced experimentally in dogs and the subsequent reattachment of tissue, especially of the root cementum, was studied.

The soft tissues surrounding the upper canines of the experimental animals were excised and alveolectomy was performed. After a healing period of six months, a window was created which permitted clear observation of whether or to what degree reattachment had taken place.

In the first experimental series, the artificially produced marginal periodontal defect was covered with gingival flaps.

In the second series, the crowns of the upper canines were removed, the pulps extirpated and the root canals filled. The gingival margins around the roots were excised and the roots, including the previously exposed surface portions, were covered with flaps taken from the lips.

After a six months' healing period, the animals were sacrificed and the canines with the surrounding tissues removed by block dissection. The specimens were fixed, stained and examined with the microscope.

In the second experimental series, the epithelium was prevented from interfering with the reattachment process. Evidence was obtained that reattachment of the connective tissue to the exposed root portions had taken place. Reattachment of the periodontium was especially visible in the root cementum, the periodontal membrane and the alveolar bone.

In isolated instances the newly formed osseous tissue on the alveolar bone reached a height of 9 mm., measured from a groove cut with a bur into the root surfaces to establish the position of the gingival margin prior to the test incision.

Even in the first experimental series in which no attempt had been made to prevent the epithelium from interfering with the reattachment process, some tissue reattachment had taken place, although to a limited degree.

The reattachment in the surgically exposed region consisted of a new cementum formation (secondary cementum). Reattachment of tissue in vital teeth was almost identical with that occurring in nonvital teeth.

Histologically, the secondary cementum was easily differentiated from the dentin substratum on which it was deposited. Shrinkage during the preparation of specimens occasionally produced artifacts which appeared between the secondary cementum and the reattached periodontal membrane.

In some instances, secondary cementum was formed and deposited on primary cementum layers which, however, were entirely lacking osteoblastic corpuscles.

Cementum can be rejuvenated only by apposition of newly formed secondary cementum. The stimuli for the deposition of secondary cementum consist mainly of necrobiotic processes occurring in the primary cementum.

The fact that substrata of secondary cementum do not necessarily have to be vital became evident by casual observation of one of the series of slides. In certain portions of the exposed root surfaces, corresponding to the position of the apical portion of the gingival margins of the periodontal defect, a small necrotic region (0.1 to 0.3 mm.) was observed between the secondary and the primary cementum. Symtomatically, this necrotic tissue resembled an incipient cementum caries. Evidently, the necrotic and probably infected region had been enclosed by the rapidly formed layers of secondary cementum. Such a condition, however, can be produced only artificially.

At the time the experimental animals were sacrificed, the reattachment process was not completed.

Figure 1 Periodontium of a dog six months after a marginal periodontal defect had been produced experimentally

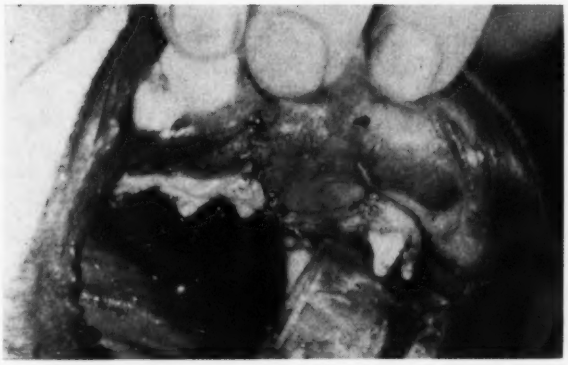

Figure 2 Condition immediately after the root of a dog's canine was covered with gingival flaps

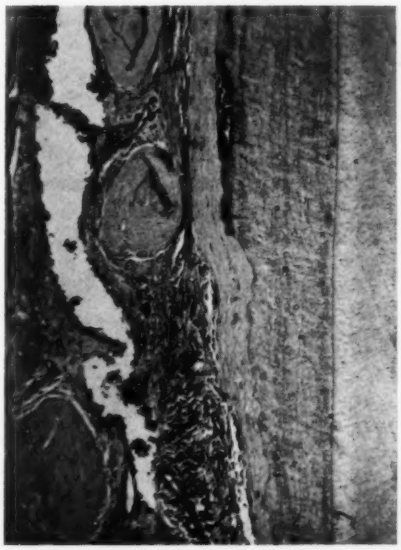

Figure 3 Reattachment of root cementum in a dog. Shrinkage artifacts and mechanically obtained anchorage

The results of the investigation can be summarized as follows:

1. Reattachment of periodontal tissue is possible under certain experimental conditions.

2. Tissue reattachment occurs whether or not curettage of the exposed root surfaces has been performed.

3. Reattachment consists mainly of deposition of secondary cementum either on primary cementum layers or on dentin substrata.

4. Reattachment occurs in teeth whether the pulps are vital or nonvital.

5. No close connection exists between the newly deposited secondary cementum and the dentin substrata. During the preparation of specimens, the secondary cementum becomes separated easily if it is not adequately anchored by undercuts to the lacunae.

6. Secondary cementum frequently is deposited on substrata of necrotic, probably infected, dentin.

Royal Dental School, Malmö, Sweden

Biosynthesis in progressive and experimentally produced periodontal disease

(Biosynthese in fortschreitenden und experimental produzierten Parodontopathien)

L. Petrovič. *Paradontol.,Zürich* 11:50-57 June 1957

Regeneration of periodontal tissue depends on the physiologic biochemistry of vital cells and on the synthesis of proteins.

In periodontal disease the biochemical constituents of periodontal cells undergo certain changes which, in addition to disturbances in the metabolism of periodontal cells, may be the main causative factors. Although this opinion will appear to many periodontists as a hazardous hypothesis, it is based on experimental facts and clinical observation.

In animal experiments with albino rats, carried out at the Dental Clinic of Belgrade, Yugoslavia, these biochemical changes in the periodontium were observed in animals in which progressive periodontal disease was present or was experimentally produced. Whether these changes were caused by allergies, trauma or infections, the animals showed symptoms which were similar to those appearing in progressive periodontal disease in man.

The normal and pathologically altered biochemical constituents can be determined in animals as well as in man. This relationship is by no means accidental. It can be established by cytochemical analyses and by histopathologic examinations of specimens taken from the diseased periodontal tissues of man and animals.

In experimental animals (albino rats), the artificially produced damage to the periodontal membrane must be maintained for at least six months to bring about these biochemical changes and to permit evaluation by biosynthesis.

More intensive biochemical disturbances in progressive periodontal disease are associated with more intensive pathomorphologic changes in the cell metabolism. Similar symptoms can be observed in progressive periodontal disease in man or in experimentally produced periodontal disease in albino rats.

It can be assumed that different types of allergy supported by various biochemical and infectious factors are responsible for these biomechanical changes occurring in periodontal cells and tissues during periodontal disease.

The result of the experiments with the albino rats increased the knowledge regarding the possible etiologic factors in periodontal disease in animals as well as in man and may contribute to significant improvements in the treatment of this disease.

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Some epidemiological characteristics of periodontal disease in a series of urban populations

A. L. Russell. *J.Periodont.* 28:286-293 Oct. 1957

Patterns of periodontal disease are described which have appeared consistently in a series of 31 studies of urban residents of 14 localities in New York, Maryland, Illinois, Texas, Michigan and Colorado. Included are 28,926 white persons and 1,018 negroes, whose ages ranged from 5 to more than 80 years. Most persons studied were 20 years of age or younger. The following pat-

terns seemed to appear consistently throughout the series:

1. The onset of destructive periodontal disease may occur early in life. Advanced disease is not uncommon in teen-age children.

2. Both the prevalence and the severity of periodontal disease increase with age. At age 60 and over, about 75 per cent of the white persons and about 90 per cent of the negroes examined showed some overt evidence of tissue damage.

3. Negroes showed a higher prevalence and a greater severity of disease than white persons at all ages.

4. The disease is slightly more prevalent in males than in females. When present at all, it may tend to be somewhat more severe in young girls than in young boys. It is more severe in men than in women after the age of 20 or 30 years.

5. A short-lived gingivitis may complicate comparisons between groups of children if they are examined at the peak or early in the declining slope of an outbreak of an infection of the respiratory tract.

National Institute of Dental Research, Bethesda, Md.

Is collagenase found in saliva from periodontal diseased mouths?

Arnold A. Swanson. *J.D.Res.* 36:717-720 Oct. 1957

Roth and Myers (1955) speculated that the enzyme collagenase might have some relation to periodontal disease.

Stimulated whole saliva was collected from 40 patients with various periodontal disturbances and examined to detect collagenase. The failure to produce evidence that this enzyme can be found in the saliva of persons with periodontal disease suggests the following possibilities: (1) it is not present, or is present in concentrations so small as to exert minimal effect on healthy collagen, or (2) as a product of microorganisms, it accumulates in recesses which protect it against ready contact with saliva and obstruct or prevent the efforts of ordinary oral hygiene practices.

School of Aviation Medicine, USAF Randolph Air Force Base, Texas

Overbite, overjet and periodontal disease of the central incisors amongst Indian male children and their corelationship

M. K. Sanjana, F. S. Mehta, R. H. Doctor and B. C. Shroff. *J.All India D.A.* 29:147-152 July 1957

The 307 Indian schoolboys between 12 and 16 years old who were subjects of this study belonged to the lower income group. Some were vegetarians, some nonvegetarians.

The labial and lingual aspects of the lower central incisors were affected more severely with periodontal disease than the upper central incisors. The gingiva on the labial aspect was more frequently defective than the gingiva on the lingual aspect for all the four central incisors examined for each subject. The gingiva on the lingual aspect of the lower central incisors was much more affected than that on the lingual aspect of the upper central incisors.

When the gingiva on the lingual aspect of the central incisors was affected by periodontal disease, the gingiva on the labial aspect was affected almost invariably.

The overbite for the vegetarian subjects was consistently higher than for nonvegetarian subjects; the overjet was practically the same for both groups.

Chi-square analysis showed no relationship between the degree of overbite and the incidence of periodontal disease on the labial aspect of the upper central incisors. A significant difference at the 5 per cent level was noted on the relation between the incidence of periodontal disease on the lingual aspect of the upper central incisors and the degree of the overbite.

Chi-square analysis showed a definite relation, even at the 1 per cent level, between the degree of overbite and the incidence of periodontal disease on the labial aspect of the lower central incisors. No relationship was obtained between the degree of overbite and the incidence of periodontal disease of the lingual gingiva of the lower central incisors.

No relation was established statistically between the degree of overjet and the incidence of periodontal disease on the labial aspect of both upper and lower central incisors, and the lingual aspect of the lower central incisors. A significant

difference at the 1 per cent level was obtained when periodontal disease affecting the lingual gingiva of the upper central incisors was analyzed relative to the degree of overjet.

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Periodontal disease in rural children of 25 Indiana counties

E. M. Benjamin, A. L. Russell and Roy D. Smiley
J.Periodont. 28:294-298 Oct. 1957

In the summer of 1955, 3,880 rural children 9 through 20 years old who were residents of 25 counties in the southern, central and western sections of Indiana were examined and scored for periodontal disease. The results were compared with those from studies of urban children which employed the same methods. The following conclusions were reached:

1. The group scores for periodontal disease among the rural children were significantly higher than scores for urban children in previous field studies, particularly at the younger ages.

2. It is doubtful whether the observed differences can be attributed to rural life as such.

3. The prevalence or severity of periodontal disease in children may be influenced by social or economic factors.

National Institute of Dental Research, Bethesda, Md.

Resistance of human gingival collagen to human gingival bacteria

John C. Thonard and Henry W. Scherp.
Proc.Soc.Exper.Biol.& Med. 96:165-170
Oct. 1957

Since breakdown of the collagen fibers that anchor the teeth is a principal feature of periodontal disease, the demonstration that microorganisms present in the gingival sulcus or periodontal pocket produce collagenases assumes importance. Investigators using collagen paper or "azocoll" as substrates have reported isolating oral and gingival organisms that exhibited either collagenaselike or collagenase activity. Schultz-Haudt and Scherp (1955), in an attempt to simulate as nearly as possible *in vivo* conditions, used as substrate fresh bovine Achilles' tendon stored and sterilized before use. Those authors concluded that oral bacterial collagenases may play a significant role in the breakdown of periodontal collagen. The present experiments were undertaken to extend the previous work to human gingival tissue.

Fresh human gingival tissue was obtained, without pretreatment, by gingivectomy on patients suffering from periodontitis. In 44 tests the tissue was incubated for ten days in broth with its indigenous microbiota. No breakdown of collagen could be detected either chemically or histologically. All other tissue elements, however, were stripped away.

In concurrent controls, bovine Achilles' tendon, stored frozen and sterilized by ethylene oxide as in a previous investigation, was used as a substrate for the same microorganisms and underwent collagenolysis in 37 of 44 tests. Freezing, thawing and sterilization of human gingival tissue with ethylene oxide rendered its collagen susceptible to degradation by its indigenous flora in 17 of 23 tests. This action of ethylene oxide was paralleled by a striking alteration of the reaction of the tissues to the azan stain for connective tissue.

The participation of bacterial collagenases in periodontal disease has not yet been substantiated. Conclusions to the contrary have been based on the digestion of altered collagen by other proteases.

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Aerobic glycolysis in the inflamed interdental papilla

H. K. Schrader, R. Schrader and G. A. Ott.
Helvet.odont.acta 1:43-45 Oct. 1957

The authors previously reported (1957) an 83 per cent increase in the rate of respiration of inflamed interdental papillae. The increased oxygen consumption was explained as being the first noticeable sign of gingival tissue damage.

A study was undertaken to investigate aerobic

glycolysis in clinically healthy and inflamed interdental papillae, by the modified Warburg method. Of 30 papillae, 5 were not inflamed, 5 showed slight, 8 moderate and 12 severe inflammation. The metabolism of clinically healthy papillae was a pure oxidative metabolism free from aerobic glycolysis. The first noticeable change of impaired normal metabolism was found in papillae with slight inflammation, which showed an increase in the tissue respiration as well as in the amount of carbon dioxide released. Aerobic glycolysis predominated over respiration in heavily inflamed papillae, the respiratory quotient reaching an average value of 2.45.

Dental Institute, University of Bern, Bern, Switzerland

Some of the less common periodontal lesions

A. Bryan Wade. *D.Practitioner* 8:23-26
Sept. 1957

Simple inflammation is the commonest condition affecting the more superficial parts of the periodontium. Less common lesions include those associated with Sjögren's syndrome; erosive lichen planus; gingivosis associated with postpartum amenorrhea, hysterectomy and oophorectomy and postmenopausal conditions; moniliasis; acquired hyperkeratosis, and acute monocytic leukemia. Inasmuch as the incidence of leukemia has risen from 17 per million in 1931 to 40 per million in 1954 in British people, a case of acute monocytic leukemia is reported.

A 34 year old unmarried woman complained of sore, bleeding gingiva of three days' duration, a headache, and feeling "off color." The gingivae were maroon colored, swollen and tender, with some ulceration of the margins. Halitosis was extreme. The condition was diagnosed as necrotizing ulcerative gingivitis. Chromic acid and hydrogen peroxide were applied to the gingival margins, penicillin troches were prescribed, and the patient advised to return in 48 hours.

No improvement had occurred. The gingivae were still sore and bleeding. The headache was now of ten days' duration, having been accompanied by body pains and diagnosed as influenza by the patient's general medical adviser. In spite of this, she had continued to work. Physically, she was of average height and weight and had a well-balanced diet. Her complexion was pale and the skin of her hands was slightly cyanosed. Hematomas about 6 by 6 cm. were present on the left elbow and ankle; the patient had no recollection of injuring these regions. An exceedingly foul odor emanated from the oral cavity; it was not like that characteristic of necrotizing ulcerative gingivitis but smelt of decaying tissue.

Examination of the oral cavity revealed only slight enlargement of the gingival margins with rounding of the interdental papillae, some of which were detached, their surfaces being shiny and demonstrating pitting. The vestibular aspect in the maxilla was purplish-red and in the mandible more dusky red. Desquamated epithelial cells lay on the surface of the attached gingivae in the maxilla. Lingually and palatally, maroon ecchymoses were present in the marginal gingivae in several regions.

Hematological examination enabled a diagnosis of acute monocytic leukemia to be made.

Arrangements were made for admission to the hospital, but 24 hours later she was found unconscious, with her face covered with blood. Death ensued in a further three hours.

Postmortem examination showed numerous petechial hemorrhages and ecchymoses. A recent hemorrhage had destroyed most of the right temporal lobe and adjacent parts of the basal nuclei of the brain. Extensive hemorrhage had occurred in the vagina and many smaller ones in the liver, tongue, esophagus, gastric mucosa and kidneys. The cause of death was cerebral hemorrhage due to acute monocytic leukemia.

The case emphasizes the great need to diagnose all oral conditions carefully. The common complaint of sore and bleeding gingivae should never be dismissed flippantly, a medical history always should be taken, inquiry into dietetic habit should be made, and evidence of any general signs and symptoms of a blood dyscrasia sought. The exceedingly rapid termination of life was unusual.

Royal Dental Hospital, University of London, London, England

Roentgenology

A survey of tongue cancer over a fifteen year period in a general hospital

Donald P. Shedd, Norman L. Schmidt and Chu H. Chang. *Surg.,Gyn.& Obst.* 106:15-24 Jan. 1958

Of 91 patients with cancer of the tongue observed at the Yale-New Haven Medical Center from 1941 through 1955, 76 were men and 15 were women. The median age was 65 years. In 35 patients the lesion was considered anterior and in 56, posterior. About one half of the lesions of the anterior part of the tongue had extended to the floor of the mouth. In four fifths of the cancers of the posterior part of the tongue, localization was made difficult by extension to fauces, floor of the mouth, anterior part of the tongue, or hypopharynx.

Among the 35 patients with lesions in the anterior part of the tongue, all but three lesions were epidermoid carcinoma. Among the 56 patients with posterior lesions, all but four lesions were epidermoid carcinoma.

Of the 87 patients treated, 72 received roentgenotherapy, as definitive treatment, preoperative treatment or palliative treatment. Before 1950, external roentgenotherapy was used to a great extent in the management of intraoral cancer. After 1950, external roentgenotherapy was used as the preoperative treatment in selected patients and is used almost routinely now as preinterstitial radium implantation therapy.

It was found that external roentgenotherapy alone rarely succeeded in sterilizing carcinoma of the tongue without producing severe damage to the adjacent bone structure; however, it could be used to great advantage as a preliminary step to interstitial radium therapy. An early diminution of the secondary infection and inflammation and a considerable regression in tumor size are usually observed after a preliminary course of external roentgenotherapy in the range of 2,000 to 2,500 r (tumor dose). This dose usually is given in a period of two to three weeks, using multiple ports; after a rest period of one week, interstitial radium implantation is carried out.

Of the 37 patients given primary treatment at the medical center from 1940 to 1951, after five years 29 had died and eight were living without cancer. The five year cure rate for the entire group was 20.4 per cent. The results are discouraging and stress the need for improvement in the approach of this problem.

There is little question that small and early lesions can be cured by either good surgery or good roentgenotherapy.

Yale-New Haven Medical Center, New Haven, Conn.

Studies with P^{32} of metabolic changes occurring after roentgenization of experimentally produced oral tumors in mice

(Zur methodischen Problematik bei Stoffwechseluntersuchungen mit P^{32} nach Röntgenbestrahlung tierischer oralen Tumoren)

R. Beckmann. *Fortschr.Röntgenstr.Nuklearmed.* 84:713-719 June 1957

At the Institute for Medical Physics and Biophysics of the University of Göttingen, Germany, different types of oral tumors were experimentally produced by injecting sarcoma cells into the oral mucosa of mice. Later, these tumors were exposed to roentgen rays.

The experiments were designed to study the effect of roentgen rays on the metabolism of nucleic acid in oral tumors; P^{32} was used as an indicator.

The growth of the tumors in the experimental animals, 123 pure-bred mice, was recorded carefully every two or three days.

In the great majority, the rate of growth was between 25 and 30 milligrams per cent daily, but in a comparatively small minority wide variation in the growth rate, between 5 and 60 milligrams per cent daily, was observed.

The indicator, P^{32}, was injected intraperitoneally in doses of 5 microcuries per gram body weight.

For the roentgenization of the experimentally produced oral sarcomas, the mice were placed in lead boxes with a suitable opening through which the tumors could be exposed. A dose of 3,000 roentgens was applied by an electric circuit of 180 kilovolts, 10 milliamperes. A copper filter, 0.5 mm., was used. The dose rate in the air at the site of the tumor was 290 r per minute.

Before roentgenization, 0.01 ml. of an 8 per cent paraldehyde solution per gram body weight was injected subcutaneously in order to keep the animals in a hypnotic state.

It was established that the rate of exchange of the radioactive inorganic phosphate between the serum and the tumor is influenced by the rate of growth and the total volume of the tumor. It is also probably influenced by the effect of roentgen rays and paraldehyde.

In this series of experiments with P^{32}, the possible source of errors in evaluating the results of the study was reduced to a minimum.

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Cobalt 60 therapy of lip cancer with block dissection of lymph nodes

J. Ernest Breed and Walter W. Carroll.
Am.J.Roentg. 77:815-817 May 1957

The availability of cobalt 60 makes it mandatory to re-examine the various technics of radium therapy. Most familiar methods of utilizing radium are predicated on its scarcity.

At the Breed Radium Institute in Chicago during the past 20 years, 155 patients with lip cancer have been treated with a small applicator containing 200 to 500 millicuries of radon that is applied to the surface of the neoplastic growth. Thirty-minute treatments were administered daily or on alternate days over a period of three to four weeks.

At a distance of from 4 to 10 mm., the applicator is positioned successively over different sections of the periphery of the tumor.

This technic is nontraumatic, the tumor bed is preserved, the patient is ambulatory and may continue his routine work. The esthetic result, as a rule, is excellent.

The lesions treated were 5 mm. thick. Smaller lesions may be treated with hard beta rays from radium. These rays are most effective to a depth of 8 mm. and do not damage normal tissues beyond this depth.

The expense of radium or radon prohibits general use, but cobalt 60 with comparable gamma rays is a satisfactory substitute. The Breed Institute has 300 millicuries of cobalt, contained in an aluminum jacket. The entire applicator measures 2 by 1 by 0.5 cm. and has the power of 500 mg. of radium. At a distance of 1 cm., the dose rate is 30 gamma roentgens per minute.

All suspicious lesions are examined microscopically. The tumor bed, however, is not disturbed because the opening of blood channels could facilitate metastasis.

With the patient recumbent, cotton is placed between the lower lip and the mandible. A finger cot stuffed with cotton, placed between the teeth, provides adequate distance from the upper lip. A gold plate, 5 mm. thick, covers the upper lip for protection. A wooden block of adequate thickness is positioned over the treatment area. The nurse, standing behind a two inch lead slab, quickly applies cobalt 60 to the wooden block.

The treatment lasts from 20 to 30 minutes. There is, however, no set tumor dose. Customary treatment provides for from 5,000 to 8,000 gamma roentgens to the tumor, but the amount actually delivered depends on the observed sensitivity of the tumor and of the surrounding tissues.

Except for isolated instances, metastases in lymph nodes cannot be cured by external irradiation. Persistently enlarged lymph nodes should be removed by block dissection, but only after the primary tumor is completely controlled. Treatment of the lymph nodes with cobalt 60 or radon at 2 cm. distance will stop further growth until the destruction of the primary tumor is ascertained. Shrinkage of the lymph nodes will occur, and if they completely disappear and no new lymph node enlargements appear during irradiation, no further treatment is indicated.

When lymph node metastases occur in lip cancer, the spread is seldom below the level of the omohyoid muscle in the deep jugular chain.

A bilateral supraomohyoid dissection will

suffice in the majority of instances. If necessary, this procedure can be converted easily to a complete unilateral deep jugular dissection. Block excisions can be performed under either local or endotracheal anesthesia.

Additional mandibular resection is mandatory when the periosteum is invaded secondarily by contiguous lymph node metastases.

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Prevention of x-ray tube breakdowns

J. E. de Groot. *M.Mundi* 2:140-144 Oct.-Dec. 1956

The x-ray tube is a comparatively expensive item in the dentist's roentgenographic equipment. It is subject to deterioration and must be replaced regularly.

Every x-ray tube contains an electronic source, usually a tungsten wire which is heated to incandescence at a temperature of from 2,000 to 2,500° C. At such a high temperature the wire disintegrates quickly, and the service of x-ray tubes is considerably shortened if they are used without interruptions.

To prolong the life of x-ray tubes, most modern dental x-ray apparatus contains a device called a "booster." The filament is heated only to a comparatively low level which is almost identical with tube currents used in fluoroscopy. When roentgenograms are to be taken, the booster increases the filament temperature for not more than one second, prior to exposure, and decreases it immediately to the "stand-by" value after exposure. The service life of the filament is thereby prolonged. If the manufacturer's specifications are followed, burnt-out filaments rarely will be the cause of x-ray tube breakdowns.

Overheating of filaments results in excessive tungsten deposits on the glass envelopes of x-ray tubes. Similar tungsten deposits are also caused by overheated targets.

Exceeding the maximum working voltage of x-ray tubes may produce electric discharges in the insulating oil, the vacuum or the wires.

In wire receptacles and terminals, the dielectric strength may be seriously impaired by excessive temperatures. Many shields contain a "cutout" that switches off the high tension when the temperature of the oil exceeds the permissible limit. This safety device prevents thermal overloading of the x-ray tube but not overloading of the tungsten disk. To prevent x-ray tube breakdown, if intensive work is necessary, the use of a cooling fan is advisable.

The main reasons for early breakdown of x-ray tubes are: (1) overheating of filaments; (2) tensions too high or too asymmetrical; (3) excessive loads or too rapid succession of loads, and (4) defective or insufficient cooling.

To prevent premature x-ray tube breakdowns, the following procedures are recommended:

1. When an x-ray tube has been out of use for more than one month, it should be broken in gradually and not operated on full base loads immediately.

2. The maximum permissible ratings, given in the manufacturer's specifications, should not be exceeded, either for single exposures or for the required minimum intervals.

3. The maximum permissible filament voltage should not be surpassed. If no automatic booster is incorporated, after each exposure the filament should be switched off.

4. The auxiliary attachments to the x-ray machine, such as cooling pumps and motor control units, should be checked regularly.

5. Measuring instruments should be checked periodically for reading accuracy.

6. Safety devices that operate only in exceptional circumstances, such as temperature limiters and relays controlling the flow of liquids, should be maintained in excellent working condition.

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Atomic energy and genetics

(Atomenergie und Erbgut)

H. Nachtsheim. *München.med.Wschr.* 99:1283-1290 Sept. 6, 1957

Twenty-five years ago, geneticists and roentgenologists issued a strong warning against the impairment of the hereditary condition of man by the indiscriminate use of roentgen rays or other forms of radioactivity in medical and dental practice.

Since then investigations have been carried out in several countries with different species of mammals. It was established that any kind or amount of radiation which reaches the reproductive cells can cause cell mutations that are passed on to the succeeding generations.

Mutations of animal genes have produced observable effects which are unquestionably harmful. There is no reason to doubt that the effects of radioactivity and atomic energy on human genes will be as harmful. No minimum amount of radiation exists which cannot produce cell mutations. Even the smallest amount of radioactivity that reaches the reproductive cells in humans or animals causes mutational alterations. The more radiation applied, the more mutations appear.

The practical release of atomic energy first received public attention on August 6, 1945, when an atomic bomb devastated Hiroshima, Japan. Since that time improvements have been made not only in the development of more powerful atomic weapons but also in the continuous release of atomic energy by chain reactors. Atomic plants are now in operation in most countries.

During his lifetime, every human being is exposed to radiation from the following sources: (1) background radiation (4.3 r); (2) roentgenotherapy, roentgenography, fluoroscopy and radioactivity used in dental and medical practice (3 r), and (3) fall-out from testing of atomic weapons, if continued at the rate of the past five years (0.1 r per year).

Dentists and physicians should keep exact records for every patient showing the total accumulated lifetime exposure to any kind of radiation.

The dental and medical use of roentgen rays should be reduced as much as is consistent with the immediate requirement for the condition.

The average exposure of the human reproductive cells to radioactivity of any kind above the natural background radiation should be limited to about 10 r from conception to age 30.

This 10 r limit should be reconsidered periodically with the idea of keeping the human reproductive cell exposure at the lowest level that is possible.

The present technics for monitoring the worldwide fall-out must be improved. Investigations of the storage of radioactivity in the hemisphere and stratosphere should be continued and extended.

Intensive research work should be carried out in the following fields: (1) fundamental genetics; (2) mammalian genetics, and (3) human and population genetics.

In dental and medical offices, the use of protective screens should be required by law. Roentgenotherapy and roentgenography involve radiation hazards also to persons outside the operating room because the beam of roentgen rays is capable of penetrating the walls; therefore, care should be taken that the direct beam is always directed at the object.

Radioactive isotopes which are proving to be an important method of obtaining new information in many sciences and are being used more and more for treatment purposes, are of particular significance in the complex problem of human genetics. Today, biologic, medical and dental researchers are by far the greatest users of radioactive isotopes and tracers and, therefore, the possibility of genetic injuries to exposed persons is growing every day.

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Pathology

The histopathology of caries of human dental enamel

Gösta Gustafson. *Acta odont.scandinav.* 15:13-55 March 1957

An attempt is made to describe the histological changes taking place when caries attacks human dental enamel. The investigations were carried out on early carious lesions mainly at the stage usually described as a "chalky spot." Methods used included polarized light, microhardness tests, dark-field illumination, ordinary transmitted light and incident light on ground surfaces.

Although the literature on caries in the enamel is abundant, it is difficult to clarify the pathological changes occurring during the caries attack because a standard terminology has not been used by the various writers. No direct comparison can be made between the different investigations and no further progress can be expected without a clear basic conception of the changes occurring during the development of the carious process in the enamel. The aim of the present investigation was to formulate a basic scheme for observations made at various stages during the development of caries. For ease of description, the carious lesion is divided into a number of zones. When the caries reached the vicinity of the dentino-enamel junction, the picture is complicated by the normal variations in the structures in this region. The clearest picture of enamel caries is thus obtained before the attack has reached these inner layers. For this reason the present investigations were concerned mainly with the so-called "white spot."

In a typical lesion the following five zones can be distinguished histologically: zone 1, increase of mineralization; zone 2, solution of inorganic substances; zone 3, hypercalcification; zone 4, decalcification with visible changes in the organic matrix, and zone 5, complete destruction.

As the carious lesion is approached from the dentin, there is first a layer of normal enamel and then an area of hypermineralized enamel (zone 1). Next there is a zone (zone 2) in which the minerals have been dissolved out or converted to a noncrystalline state. Nearer the surface there is another zone (zone 3) characterized by an increase in minerals. In these three zones no microscopically visible changes in the organic matrix have taken place. Real disintegration begins in zone 4 of the lesion where the minerals have been dissolved out and have disappeared, and destruction of the organic matrix has commenced. In zone 5 all the components of the enamel have been destroyed and a cavity has formed.

The different zones may be due to different reactions to the same agent, probably acid, which both dissolves the minerals of the enamel and destroys the organic matrix.

The individual prism sections are involved directly in the changes. The prism sections are affected independently of each other. The prism

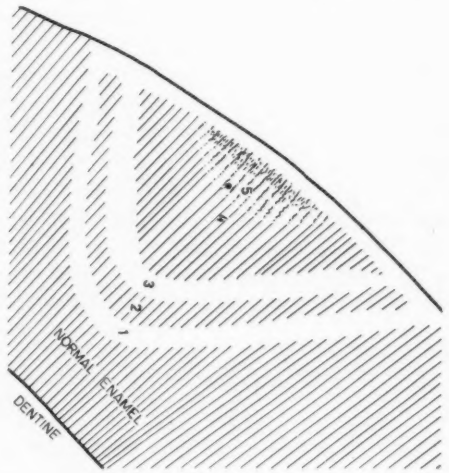

Figure 1 Schematic drawing of a carious lesion. Surrounding the lesion is a hypercalcified zone (1) which is followed by a second zone (2) containing less minerals. This zone usually does not extend to the surface. The third zone (3) is a zone of calcification. The final distintegration of the enamel begins in zone 4 and is completed in zone 5. A harder surface layer is often found

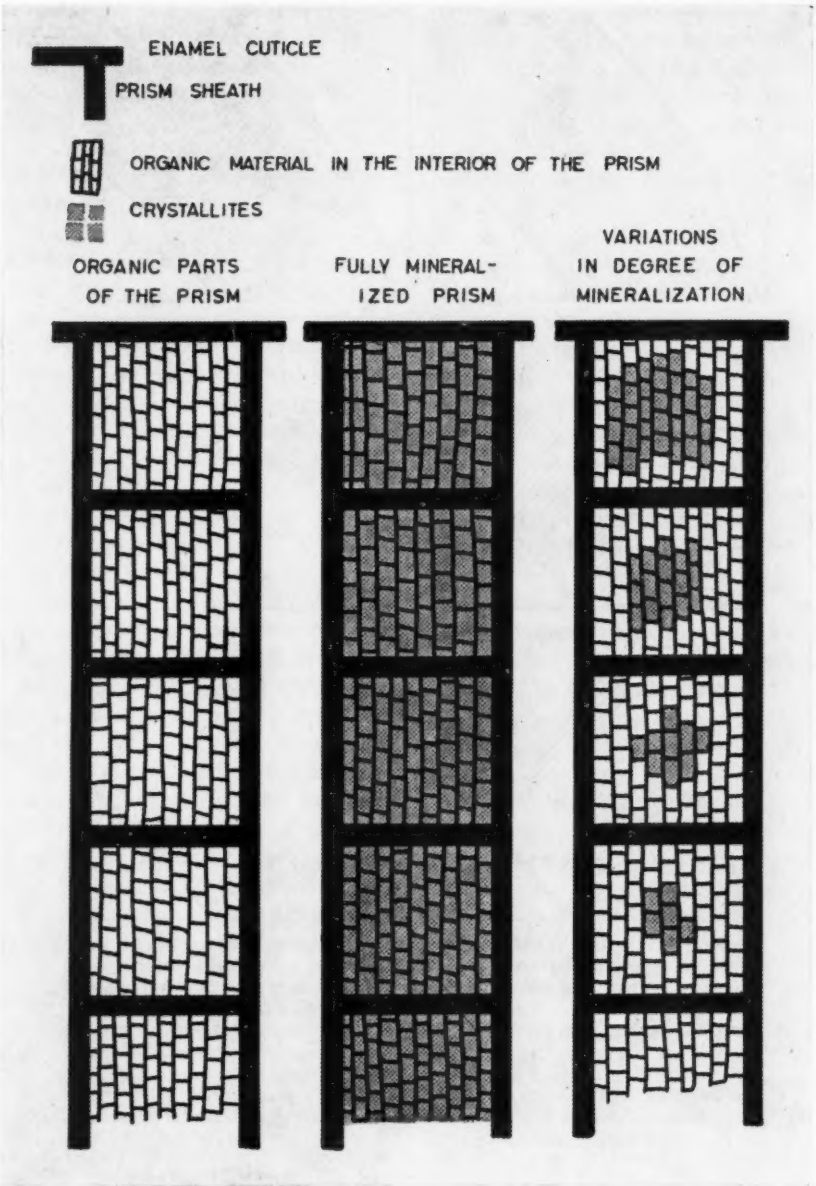

Figure 2 The results of microhardness tests through a carious lesion. Note the increased hardness in zones 1 and 3, and the gradual decrease in hardness in zones 4 and 5. Zone 2 shows a hardness which is lower than that in zones 1 and 3 and is even lower than the hardness in the normal enamel outside the lesion. The surface layer is harder than the underlying decomposed enamel

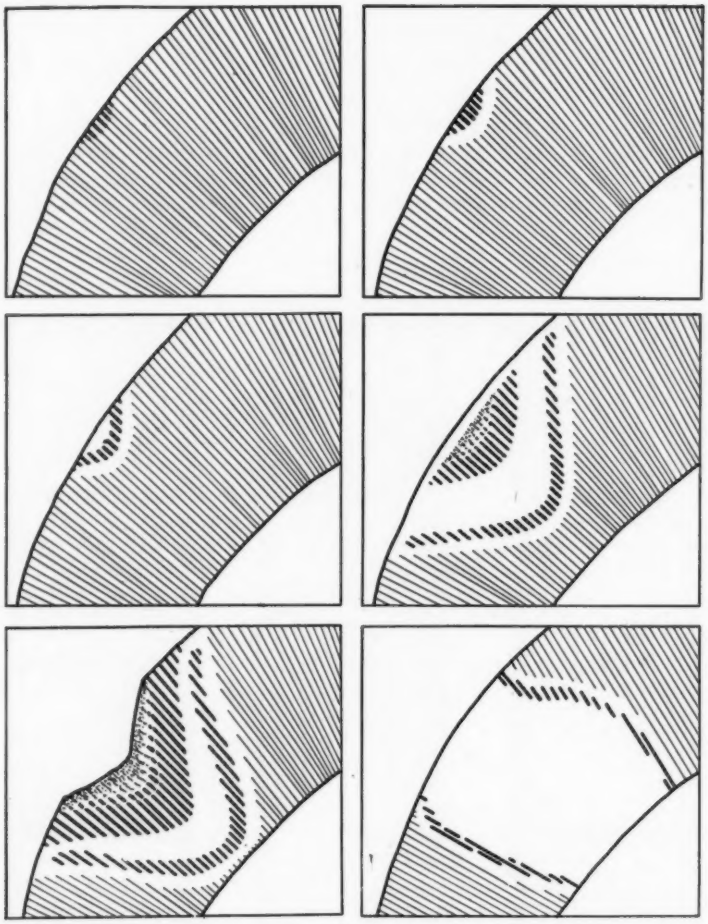

Figure 3 Progress of caries. Above, left: Caries starts as demineralization (zone 2). Above, right: The minerals dissolved out in the second zone penetrate the normal enamel and are precipitated (first zone). Center, left: The third zone is first seen in the middle of the lesion and is surrounded by the second and first zones. The second zone reaches the surface. Center, right: The fully developed lesions show five zones. The second zone does not reach the surface. The surface layer is here mineralized. Below, left: The clinical cavity shows a broken surface and only parts of the fourth zone. The fifth zone has disappeared. Below, right: Great cavities show the first two zones and sometimes three zones at the sides

sheaths are destroyed in the fourth zone but may change their birefringence in the second zone. The penetration of the enamel takes place first in the prism sheaths, and in the interprismatic substance, but the minerals are dissolved out in the prism sections.

Retzius' lines are not particularly affected in the early zones but are accentuated in the fourth and fifth zones.

The outer surface of the enamel is harder and more mineralized than the underlying enamel in the carious lesion.

Caries develops continuously and the zones are not all developed at the same time. Cavitation usually begins as the lesion nears the dentino-enamel junction.

Caries in the fissure starts at the entrance to the fissure, not at the bottom, but the actual cavitation may be seen first at the bottom.

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Cancer development and the presence of nonvital teeth

(Können wurzelbehandelte Zähne für die Krebsentstehung verantwortlich gemacht werden?)

Hans Iskraut. *Deut.Zahnärztebl.* 10:337-345 May 8, 1957

Many cancer researchers have demanded that all nonvital teeth should be eliminated and conservative root canal treatment be prohibited. These demands, however, are not based on biologic knowledge and physical experience, because the causation of cancer still is undetermined, even if the thesis may be accepted that for all practical purposes cancer is neither contagious nor infectious.

It is also not established that cancer may be caused by hereditary factors, although a certain predisposition or susceptibility to cancer is apparently transmissible through inheritance.

There is much that dentists can do in the prevention of cancer, through detecting early instances in the maxillofacial region, and by referring patients to cancer institutes and specialists for verification of diagnosis and subsequent treatment. They also can help in the control of cancer by increasing their knowledge of probable causes, especially with relation to irritations produced by imperfect teeth and inadequately fitting dentures. It is doubtful that all dentists realize fully the help which can be obtained by proper evaluation of oral roentgenograms of patients.

The actual transition from benignancy to malignancy of oral tumors cannot be determined, even by microscopy. The earliest recognizable symptoms of cancer are those appearing in precancerous conditions. These include irritations from jagged teeth or ill-fitting dentures, syphilitic leukoplakia of the tongue, chronic ulcerative lesions in the maxillofacial region, and tissue injuries caused by roentgen or radium rays. These sources of irritation may have ceased to act several years before cancer actually appears or the development of malignant tumors may supervene during their action.

Ziegler suggested the following definition of cancerous neoplasms: "A tumor is a new formation of tissue, which is atypical in structure, serves no useful purpose in the entire organism, and the growth has no typical termination." The words "new formation of tissue" exclude cystic swellings; the attribute "atypical in structure" excludes hypertrophies, and the final clause "the growth has no typical termination" excludes all inflammations which progress toward suppuration and recovery.

The dentist, not the cancer specialist, is qualified to determine the indication for root canal treatment or tooth extraction. In dental and medical literature it has been reported that in some instances (unnecessary) extraction of nonvital teeth affected unfavorably the outcome of oral cancer. Such extractions delayed the treatment of the neoplasm or caused a more rapid extension of the tumor. When a tooth is extracted from within a cancerous growth, the tumor immediately will invade the osseous structures through the exposed alveolus.

The dental profession has been conscious of cancer. Practicing dentists must continue to be vigilant, not by radical elimination of all nonvital teeth or by abolishing root canal treatment, as demanded by some oncologists, but by recognizing early oral lesions, suspicious swellings, ulcerations, papillomatous growths, radiolucency or roughness. These conditions require immediate positive diagnosis and adequate treatment.

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Cooley's anemia: a review of the roentgenographic findings in the skeleton

John Caffey. *Am.J.Roentg.* 78:381-391 Sept. 1957

More comprehensive studies of patients with Cooley's anemia have sustained the original contention of Baty and others that most of the patients are of either Greek or Italian stock, either native or emigrant. The disease is widely and thinly scattered on the edges of the Mediterranean basin.

Several new roentgenographic features have been observed since Cooley's first reports in 1927. In all severe instances, both growth and maturation of the skeleton are retarded. Cooley's anemia

is the best example of skeletal dwarfism and infantilism caused by chronic anemia; both of these features become more pronounced with increase in age.

In the paranasal bones, overgrowth of marrow impedes their pneumatization from the outset and sometimes completely suppresses pneumatization. The frontal sinuses may be normal, small or absent.

Hypertrophy of the maxilla, caused by overgrowth of its marrow, may lead to overbite on the mandible and ectopia of the teeth, especially the central incisors.

Frontal and profile photographs of a three year old Greek girl show the pronounced enlargement of the malar and maxillary segments of the face with protrusion of the upper incisors and retraction of the upper lip. Photographs of the same girl at six years show more pronounced enlargement of the face between the eyes and the mouth and more pronounced retraction of the upper lip. The exposed protruding upper incisors give a cast to the face which is more "rodent" than "mongoloid."

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A cephalometric x-ray appraisal of morphological variations in cranial base and associated pharyngeal structures: implications in cleft palate therapy

A. C. Brader. *Angle Orthodont.* 27:179-195 Oct. 1957

At present, criteria are poorly defined for deciding whether a person born with a cleft palate should receive surgical or prosthetic attention as the primary method of choice for treatment. Roentgenographic cephalometrics, with its objective service to the orthodontic profession, may provide the means of evaluating patients with cleft palates for treatment indications.

In this study conventional cephalometric technics were applied to oriented lateral head roentgenograms of 39 cleft palate subjects and 60 control subjects. Statistical analysis of comparable measurements on the cleft palate group and the control group supplied evidence of the following significant mean differences:

1. The subjects with cleft palate manifested superior position of the posterior margin of the hard palate in the region of the pterygomaxillary fissure as compared with the control subjects.
2. The subjects with cleft palate relatively had a greater quantity of adenoid tissue than did control subjects.
3. The subjects with cleft palate had smaller oronasopharyngeal regions than did the control subjects.

The investigation resulted in the following conclusions:

1. Persons with cleft palate constitute a group whose measurements vary about mean values differently than do those of the control subjects.
2. There is a collective pattern of variations in measurements on the cranial base, nasopharynx and oropharynx which may be expressed quantitatively in polygonic form for a group of control subjects.
3. Individual cleft palate subjects may be plotted against this collective pattern of variations to delineate extreme structural differences visually.
4. The deviations of any cleft palate case from the collective pattern of variations of the control group constitute criteria on which a treatment method may be selected.

Future studies should be conducted on groups within the age range currently recommended for inception of treatment, that is, in the range from four to six years old.

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Adenolymphomas of the parotid region

S. J. Viikari. *Ann.chir.gynaec.Fenniae* 46:63-73 Oct. 1957

At the Surgical Clinic of the University of Helsinki, Finland, four patients were operated on to remove benign adenolymphomas occurring in the parotid region.

Histologic examination of tumor tissue specimens supported the hypothesis that parotid adenolymphomas develop from ectopic remnants of salivary tissue in regional lymph nodes especially in the vicinity of the parotid gland. Three different types of parotid adenolymphoma can be

distinguished on the basis of the histologic findings: (1) adenoma lymphomatosum; (2) cystadenoma lymphomatosum and (3) papillary cystadenoma lymphomatosum.

Parotid adenolymphomas generally are localized, encapsulated tumors that may be situated either on the surface or within the gland.

Enucleation of the tumor is an adequate surgical treatment in the majority of instances. Roentgenotherapy is of doubtful value.

Differential diagnosis sometimes is difficult because the symptoms resemble those of mixed parotid tumors or lymphomas of the neck.

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Erosion associated with diabetes insipidus

L. D. Finch. *Brit.D.J.* 103:280-282
Oct. 15, 1957

Excessive ingestion of acids is usually the main chemical factor in the erosion of tooth substance. A case is reported in which a high intake of citrus fruit drinks is associated with diabetes insipidus, as well as with pronounced, rapidly developed lesions.

A 27 year old woman complained of continual chipping of her teeth which was making her feel sick and was causing irritation of her tongue. There was no history of discolored or otherwise hypoplastic teeth in the patient's family. Her own teeth had been exceptionally good. Eight months previously the patient had been involved in a highway traffic accident. Soon afterwards she developed diabetes insipidus, presumed to be due to traumatic functional severance of the pathways between the hypothalamus and the posterior pituitary gland. Her fluid intake increased to a maximum of 15 pints a day uncontrolled. When she was treated with a vasopressin, it was reduced to about nine pints a day. To relieve the monotony of drinking so much water, two months after the accident the patient substituted fruit juices and diluted fruit squashes. The present condition was first noticed three to four months later.

Examination revealed widespread erosion of the dentition. The enamel was mostly dull, opaque and greyish-white. In some regions the enamel had been lost completely, particularly in the incisal third of the labial surface of the upper incisors and the cusps of the lower molars. There was exposure of the dentin in these regions, with brown staining. Some sharp edges, where enamel had broken away, were noted.

Titration of the patient's saliva by the method of Dreizen and others (1946) showed that the initial pH on two separate days was 6.38 and 6.45. To lower the pH of 5 ml. of saliva to 6.0 took, respectively, .08 ml. and 0.14 ml. of 0.1 N lactic acid. There was, therefore, a combination of rather low initial pH with low buffering capacity.

Citric acid is the major component of the acidic fraction of the citrus fruits. The association between high intake of citrus fruit drinks and the appearance of the erosion in this patient is apparent.

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Dislocation of the jaw

M. S. Sanders. *Brit.M.J.* No. 5055:1240-1241
Nov. 23, 1957

Unilateral forward dislocation of the jaw as a result of yawning rarely occurs. The author was skeptical when he recently received a telephone call at 2:30 A.M. from a husband who reported that his wife had experienced such an accident. The 30 year old woman undoubtedly had dislocated the right side of her jaw. The dislocation was reduced fairly easily with an audible click, to the instant delight of both patient and author. The method used was the usual one of inserting the thumb into the mouth as far as the angle of the jaw and, with the patient in a reclining position, exerting pressure with the thumb in a downward and backward direction while at the same time raising the chin with the fingers of both hands.

The patient said she had always dreaded dislocating her jaw with yawning since she had been a girl of 17, when she had an uncomfortable feeling of nearly having done so.

Kingston upon Hull, England

Endodontics

A bacteriological and histological study of traumatised teeth

I. M. Chirnside. *New Zealand D.J.* 53:176-191 Oct. 1957

An investigation into the bacteriologic and histologic status and the toxicity of the contents of the pulp canals of unexposed, nonvital, injured teeth resulted in the following conclusions:

1. Of 28 such teeth investigated, one proved to be vital. Of the remainder, in 15 the pulp canals were infected. The organisms were all of types commonly present in the mouth.

2. Thirteen of the 28 pulp canals contained remnants of pulp tissue. Twelve of these remnants showed varying degrees of autolysis, but one was considered a healthy specimen of collagenous fibrous tissue. Consequently, the diagnosis of nonvitality in this instance was wrong. The mistake represents an error of 1 in 28 in the assessment of nonvitality by current means.

3. The survival and perhaps even the repair of pulpal infarcts may not be dependent entirely on revascularization. Instead, pulpal infarcts conceivably may be nourished for long periods by the diffusion of tissue fluid alone, in the same manner as the deeper cells of epithelium.

4. Of the 28 teeth examined, 23 gave evidence of chronic periapical inflammation. In 15 of these, the canals were infected and often contained autolyzing remnants also, but in eight instances an autolyzing pulp alone was responsible for an inflammatory reaction in the periodontal membrane.

5. An *in vitro* experiment was conducted to test the ability of an organism to invade a nonvital pulp by way of the odontoblastic processes of nonvital dentin. The occlusal dentin of 20 bicuspids was exposed for eight weeks to a culture of *Serratia marcescens* and to an unidentified strain of *Streptococcus viridans* from an infected root canal. The results showed that, under the conditions of the experiment, both organisms were capable of invading the pulp of nonvital teeth by way of the necrotic odontoblastic process.

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Treatment of pulpitis with infiltration anesthesia

(Pulpitisbehandlung durch Infiltrationsanästhesia)

A. Rost. *Deut.zahnärztl.Zschr.* 12:1178-1183 Sept. 1, 1957

At the Dental Clinic of the University of Jena, Germany, selected patients in whom acute pulpitis had been diagnosed were treated exclusively with infiltration anesthesia.

In these patients, the pulp of the involved teeth was still vital although the periodontal membrane was affected severely. The anesthetic solution (2 cc. of a 2 per cent solution of hydroxyprocaine) was injected directly into the inflamed tissue.

The pain caused by inflammation of the pulp and of tissues adjacent to the involved tooth (mainly upper and lower molars) disappeared immediately after injection. A deposition of mineralized matter resembling secondary dentin developed over the exposed but still vital pulp. The injection also caused the destruction of the pathologic microorganisms in the pulp chamber. Proper instrumentation prevented secondary infection of periapical tissues. The root canals appeared to be intact.

Subsequent roentgenographic examinations revealed a more favorable condition of the periapical tissue than was ever obtained by pulpotomy or root canal treatment.

Although pharmacologic studies have demonstrated that hydroxyprocaine is more potent and less toxic than procaine hydrochloride, additional bacteriologic and histologic tests must be carried out to determine whether infiltration anesthesia with hydroxyprocaine can be advocated for the treatment of pulpitis.

Until then, this method cannot be recommended in all instances of pulpitis and should be

attempted only when the preservation of the pulp vitality is imperative. In other instances it is advisable to perform pulpotomy or pulpectomy to preserve the tooth.

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Bacteriologic control in endodontics
(Bacteriologische controle in de endodontie)

J. van Amerongen. *Tschr.tandheelk.* 64:572-576 Aug.-Sept. 1957

Several authors, recently Appleton, Buchbinder, Ostrander, and Morse and Yates, have stated that root canals should not be filled until bacteriologic tests have revealed that two consecutive cultures are negative. These statements were based on the fact that often the first negative culture was followed by a positive culture.

Appleton reported on 156 instances of infected root canals in which 26 per cent negative cultures were obtained before the next cultures showed positive results.

Grossman found the same phenomenon in 8 per cent of 26 instances examined.

At the department for conservative dentistry of the University of Utrecht, the Netherlands, 385 patients with infected root canals were observed and treated, among whom 180 had vital pulps and 205 had necrotic pulps.

The initial cultures were taken by introducing an absorbent point into the root canal where it remained for three minutes. The subsequent cultures were obtained by bringing the point in contact with the periapical tissue for three minutes. Special care was taken to ascertain that the absorbent point carried also traces of dentin which had been dislodged with a Hedström file.

Cultures were taken during various stages of endodontic treatment. The initial cultures (I-cultures) were obtained prior to treatment. The next cultures (P-cultures) were obtained immediately after the mechanical cavity preparation. Subsequent cultures were designated M-1, M-2 and M-3 after they were taken when therapeutic agents had been applied. If the bacterial test of an M-culture was negative, a control culture (C-culture) was obtained. Only after it was determined that the C-culture also was negative was the root canal filled.

Before the M-cultures were taken, the applied drugs were eliminated from the root canal by rinsing with 2 ml. of a sterile saline solution. One week elapsed between each session. After each session the root canal was sealed with a sterile cotton pellet which was covered with zinc oxide-eugenol cement and gutta-percha.

This procedure assured that the root canals which yielded initially negative cultures were not filled before at least one treatment with a therapeutic drug. In each instance, therefore, at least six cultures were available for the bacteriologic tests.

The experiment was designed to establish the following data: (1) the number of instances in which a positive culture was obtained after the initial culture was negative, and (2) the frequency of this phenomenon at the various stages of endodontic treatment of teeth with vital or necrotic pulps.

The conclusions reached are as follows:

1. The probability that after a negative culture has been obtained, the subsequent culture will be positive appears to be equal whether one or two negative cultures had been taken previously.

2. This holds true for the M-cultures obtained at various stages of root canal treatment.

3. If early negative I-cultures are followed by negative M-1, M-2, M-3, P and C-cultures, it can be assumed that the root canal is bacteriologically ready for filling.

Data presented do not support the hypothesis that one negative culture obtained by an experienced operator is sufficient evidence for the bacteriologic readiness for filling of the root canal. Obviously, one negative culture, whether taken by an experienced operator or an unexperienced dental student, is not a sufficient proof. Only after a series of negative cultures (including C-cultures) are obtained, should the root canal be filled.

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Anesthesia and analgesia

Utilization of nitrous oxide-oxygen and trichloroethylene for general anesthesia in ambulatory patients

Robert A. Atterbury and Sunder J. Vazirani. *Internat.J.Anesth.* 4:131-137 June 1957

The University of Illinois Research and Educational Hospital Oral Surgery Clinic, which treats about 1,000 patients (mostly children) each year, has found that the nasal administration of nitrous oxide-oxygen, with a minimal supplement of trichloroethylene, is reasonably safe in minor dental operations.

Certain basic precautions must be taken, however. The physical and emotional state of the patient must be evaluated. The patient should be a good anesthetic risk. The operation should be carried out in a fully equipped room with the necessary facilities for aspiration and resuscitation. The scope should be limited to relatively straightforward operations requiring not more than five minutes. The patient should have a patent nasal airway, which the anesthetist should ensure at all times by supporting the mandible, and by the passage, if need be, of a nasopharyngeal tube, or even by nasotracheal intubation. The percentage of oxygen should never fall below the atmospheric level of 21, and normally should exceed this level. A volatile supplement of trichloroethylene should be admitted gradually and in small amounts, and should be discontinued as soon as possible.

Much care must be taken in the placement of the oropharyngeal pack in the posterior part of the oral cavity. The pack should be large enough to close off the throat without forcing the tongue back or unduly filling the oral cavity. It should serve the following purposes: prevent foreign bodies from entering the larynx and pharynx; prevent the swallowing of blood, mucus and pus; prevent ingress of air, and restrict the egress of gas.

The recovery period must be properly supervised. A system of postoperative follow-up is desirable. All members of the operating team must be well trained and must function as a unit.

Experience over the past six years with ambulatory dental patients demonstrates that trichloroethylene is a valuable agent in combination with nitrous oxide-oxygen. It comes close to meeting the requirements of an ideal agent for the inducement of analgesia or anesthesia in the ambulatory patient.

University of Illinois Research and Educational Hospitals, Chicago, Ill.

Nitrous oxide anesthesia

J. D. McDonald. *Brit.M.J.* No. 5046:712 Sept. 21, 1957

Carpopedal spasm has been induced in several women patients after dental anesthesia with a MacKesson machine. These patients received nitrous oxide and 5 per cent oxygen without rebreathing. The painful muscular spasms developed during the anesthesia and remained for several minutes after it. Vigorous massage and hot bathing relieved the condition.

One patient collapsed two hours after the anesthesia with repetition of the carpopedal spasm. The intravenous injection of 10 mm. of 10 per cent calcium gluconate succeeded immediately in removing the spasm. Three hours later the spasm recurred, this time with early laryngeal spasm. Another injection of the calcium gluconate proved successful.

One young girl developed carpopedal spasm on three occasions, once with 15 per cent oxygen anesthesia and re-breathing. She developed a similar spasm while receiving gas and air from a Minnitt's apparatus, in first-stage labor. An injection of 10 mm. of calcium gluconate produced almost immediate relief of the spasm.

Perhaps in patients with a mild degree of calcium deficiency, overbreathing reduces the carbon dioxide level in the blood, thereby also reducing the calcium content in the blood.

Hawes, Yorkshire, England

Cyclopropane anaesthesia: a technique suitable for children

G. G. France. *Brit.J.Anaesth.* 29:76-80 Feb. 1957

Cyclopropane may be used in anesthesia for children by the to-and-fro carbon dioxide absorption technic (closed method) and by the partial rebreathing technic without carbon dioxide absorption (semiclosed method) or by a combination of these methods.

The following technic of cyclopropane anesthesia by the semiclosed method has been tried over a period of nine months in an unselected series of 84 children. This method has been found to be both safe and suitable for the anesthesia in operations of up to two hours' duration.

Premedication consists of from 0.15 to 0.3 mg. atropine. This drug is used to prevent respiratory depression and also to inhibit secretions stimulated by cyclopropane. It also protects against disturbing reflexes of the vagus nerve.

A Boyle's machine and Magill's rebreathing attachment are used. Also Cope's apparatus, but without its soda lime absorber, is suitable. Care should be taken to ensure that the expiratory valve opens easily.

The oxygen flow rate is set at 1.25 liters per minute and normally remains at that point throughout the entire operation. The nitrous oxide flow rate is adjusted to 3 liters per minute.

The mask, with its expiratory valve fully open, is moved gradually to the child's face. Cyclopropane is added immediately after the mask is in position and the flow is steadily increased to 750 ml. per minute to obtain a concentration of 15 per cent cyclopropane.

If a deeper level of anesthesia is desired, the nitrous oxide flow rate is reduced to 2 liters per minute to give a concentration of 20 per cent cyclopropane. At the same time the oxygen percentage may be increased to compensate for the nitrous oxide reduction.

The most satisfactory level of anesthesia in children for most dental or oral procedures is attained at about 15 per cent concentration of cyclopropane.

Park Road, Altricham, Cheshire, England

Investigations of local anesthetic solutions with paper chromatography

(Contribution à l'étude des solutions d'anesthésiques locaux par la chromatographie sur papier)

L. Castagnola, A. Marangoni, A. Massarotti and A. Riva. *Rev.mens.suisse odont.* 67:621-638 July 1957

Paper chromatography is the most accurate physicochemical method for the qualitative and quantitative analysis of complicated chemical compounds. This method permits the determination of minute impurities in drugs which had been found pure by other test methods.

At the Dental Clinic of the University of Milan, Italy, studies were carried out on local anesthetic solutions which are frequently used in European dental practice. Paper chromatography was used exclusively. The following three groups of local anesthetics (and their components) were investigated: (1) solutions with a lidocaine base; (2) solutions with a procaine base, and (3) solutions with a base of mixed active anesthetic substances. The drugs examined are produced in Germany, Italy and Switzerland, and are used as local anesthetics in the practice of dentistry in other countries.

In the paper chromatograms, the active anesthetic substances could be easily separated and determined as well as their hydrolytic products. Vasoconstrictor components, however, could be detected and determined only if the solutions contained more than 0.002 per cent of ingredients added to produce diminution of the caliber of blood vessels, especially constriction of the arterioles leading to decreased blood flow.

In these local anesthetics, at present available in physiologic and sterile solutions, and in one instance in tablets, it was possible to analyze in one paper chromatogram all the active anesthetic substances and vasoconstrictor agents such as epinephrine and nor-epinephrine.

In two brands of local anesthetics which, according to their manufacturers' claims, included vitamin C (ascorbic acid), no trace of this vitamin was determinable in paper chromatograms.

Bahnhofstrasse 39, Zurich, Switzerland

General

Infrared photography of the oral mucosa

Joel Friedman, Theodore Lite and Herbert A. Fischler. *New York J.Den.* 28:7-13 Jan. 1958

The possibility of demonstrating the superficial venous systems in the oral mucous tissues not clinically visible was studied with the following photographic materials: 3¼ by 4¼ inch view camera, two electronic flash heads, focal framer and chin rest, Wratten no. 87 infrared filter, Wratten no. 25 red filter, Kodak infrared sheet film, Ilford HP3 panchromatic sheet film, base for mounting camera and lights, pan head and focusing stand (Fig. 1).

Each of five anatomical areas of the mouth was photographed successively with panchromatic film and with infrared-sensitive film plus infrared filter. Since the plane of focus of infrared differs from that of visual light, the camera is prefocused on the subject, using the Wratten no. 25 filter which closely approximates the infrared focus. A Wratten no. 87 filter is substituted after focusing to eliminate the superficial oxygenated capillaries.

The exposure for infrared film, 1/50 at f-16, is made with the no. 87 filter in place. The filter is then removed and a control exposure, 1/50 at f-45, is made in Ilford HP3 panchromatic film. The films are developed in Kodak Dektol developer 1:1 at 68° F. for 3.5 minutes, rinsed in an acetic acid 2 per cent stop bath, and fixed in Kodak fixer. They are then washed and dried.

The usual panchromatic photograph of the inner surface of the lips (Fig. 2, left) shows the normal fine webbed pattern of vessels, just above capillary size. The infrared print (Fig. 2, right) shows a faint trace of the superficial network visible to the naked eye (and panchromatic film), but mainly there are two clearly defined trunks of larger caliber veins, with some branches, apparently draining venous blood from lip tissues to the region of the frenum.

With panchromatic film the dorsum of the tongue shows the usual topography and texture; with infrared film, the same tongue exhibits the

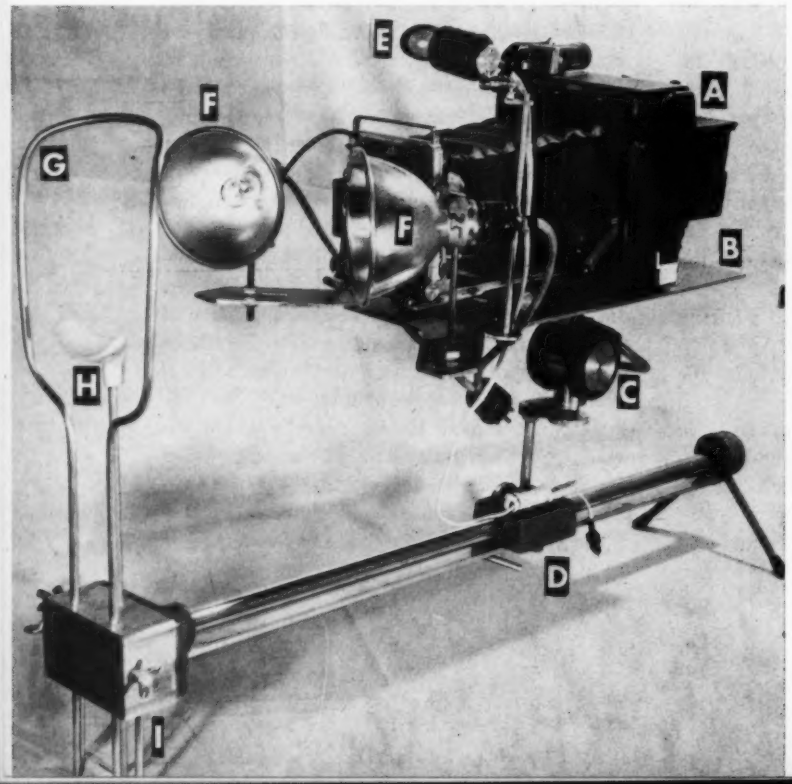

Figure 1 The camera (A) is attached to the base (B) by the screw on the pan head (C). The pan head is attached to the rider on the focusing stand (D). A focusing light (E) is used to focus the image on the ground glass of the camera. Two electronic units (F) at an angle of 40 degrees are used for flat illumination. A head frame (G) and chin rest (H) are used to position the patient, prevent subject movement and standardize photographs. Set screws (I) allow for vertical adustment of the head frame and chin rest

Figure 2 Left: Inner aspect of lower lip, panchromatic film. Right: The same, infrared film

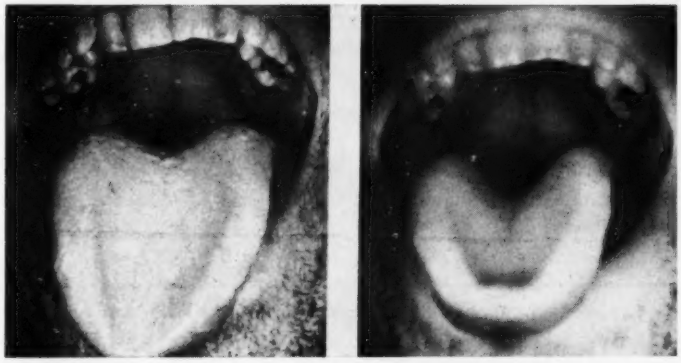

Figure 3 Left: Dorsum of tongue, panchromatic film. Right: The same, infrared film

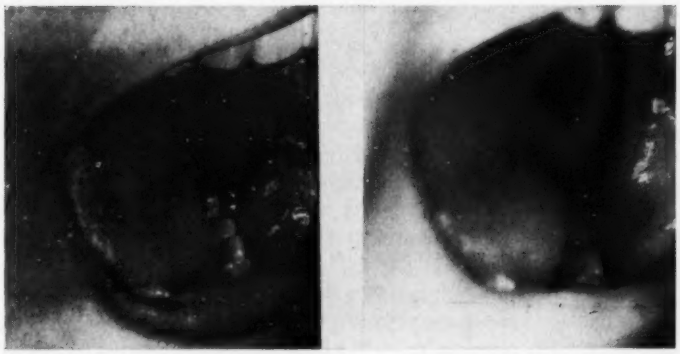

Figure 4 Left: Buccal mucosa, panchromatic film. Right: The same, infrared film

Figure 5 Left: Uvula and fauces, panchromatic film. Right: The same, infrared film (inset is of posterior pharyngeal wall)

ghostlike whiteness of the fully reflected infrared picture, and comparison of venous patterns of the dorsum of the tongue cannot be made (Fig. 3).

Conventional photographs of the sublingual zone disclosed only a faint indication of the veins normally present in this region. Infrared photography brought to prominence the large, tortuous veins which were on either side of the frenum. They can be seen to drain venous blood from the tip of the tongue toward the base as the caliber of the veins increases.

A panchromatic film of the buccal mucosa (Fig. 4, left) displays the typical glistening surface of the mucous membranes of the cheek, with few of the small superficial vessels so abundant on the inner surface of the lip. The infrared photograph (Fig. 4, right) shows a horizontal venous pattern draining blood from the perioral region and the labial commissure.

With panchromatic film, the hard palate shows the normal heavy hornification and the soft palate shows the typical arteriovenous complex. With infrared film, the soft palate shows venous patterns not visible clinically, draining blood toward the fauces from the median raphe. The uvula and fauces on the regular film (Fig. 5, left) presented the usual network of smaller vessels; infrared venography (Fig. 5, right) brought several larger veins to light, particularly on the posterior pillars of the fauces.

Infrared photography appears to have a potential as a diagnostic aid in the three major areas of dentistry—research, education and clinical application. In pathologic studies it can be used to detect abnormal size, interruption, or diversion of venous patterns due to stasis or to the presence of vascular tumors. There is need for standardization of "average" patterns to establish an accepted base for the identification of variations in venous patterns.

Jewish Chronic Disease Hospital, Brooklyn 3, N.Y.

Presence of Streptococcus pyogenes in the oral cavity and respiratory tract in children

(Prilog o prisutnosti beta hemolitičkog streptokoka kod bolesni djece)

T. Grüner, F. Maričič and S. Basta.

Vojnosanit.pregl. 14:273-275 May 1957

The presence of *Streptococcus pyogenes,* the pathogenic beta hemolytic species (Lancefield's classification) was established in 27.44 per cent of all Yugoslavian children with infection of the oral cavity and the respiratory tract. A higher percentage was observed in older children than in infants.

Microbiologic examination of secretions from the nose is necessary only in instances in which a localized infection of the nasopharyngeal region is diagnosed; the sometimes negative result is misleading when the oral cavity is affected.

Infections in the region of the mouth and the throat should be considered significant because *Str. pyogenes* should always be suspected as the probable causative factor.

Hematogenous infection with pyogenic organisms may explain the acute exacerbation of chronic oral abscesses or of secondary infection of exposed pulp chambers.

The patient's resistance is important. Many secondary infections of the oral cavity and respiratory tract are associated with the patient's lowered resistance mechanism.

In acute periodontitis caused by root canal medication the symptoms are similar to those appearing in *Str. pyogenes* infection. In most instances there exists a mixed etiology; the tissues inflamed by the use of chemicals offer no resistance to bacterial invasion.

Before antibiotic treatment is given, a bacteriologic evaluation should be made. This should include an exact analysis of the bacteria present and tests to establish sensitivity to antibiotics (penicillin).

Only by acting in this manner can child patients be protected against secondary infections and severe complications.

Bakteriološko odjeljeneje, Vojne bolnice, Zagreb, Yugoslavia

Malaya dental programme

J.All India D.A. 29:121 May 1957

The Penang (Malaya) Medical Training School has a training course for dental nurses, taught by the Malayan girls who were trained in dental nursing in New Zealand. The three year course is open to candidates who have passed the Senior Cambridge examination. The course was started in 1950. By 1953, 80 dental nurses had graduated and were working in dental clinics attached to urban and rural health centers, attending about 10,000 patients a month. The dental health service operates as part of the Medical Department, and works closely with the education authorities, so that dental care of school children is emphasized. The dental nurses all are under the supervision of qualified dentists in government service.

Two girls from Hong Kong have been trained at the school in Penang.

Penang Medical Training School, Penang, Malaya

The advantages of a group practice and office administration

Alfred J. Peetz. *Illinois D.J.* 26:647-650 Oct. 1957

The tendency today is toward group practices, in which one dentist employs one or two other dentists. The chief advantages of group practice are that production can be increased and overhead reduced.

Among the chief causes for the failure of group practices are these: (1) failure, when employing an associate, to reach a complete understanding about his financial future; (2) unfairness in remunerating an associate; (3) anger if the associate drives away the other dentist's patients, and (4) giving the associate only the menial work, such as prophylaxis.

The most satisfactory group practice is that in which each dentist specializes in a particular field. The dentist in charge should select the work that his associates are most capable of performing, and let them take special courses when available to qualify them for the work chosen.

Perhaps the most satisfactory financial arrangement is for the dentist in charge to pay each associate 50 per cent of the income from that dentist's work. The employer pays all bills and office expenses. Or, to protect the associate in the event of illness, the associate might receive a salary of, say, $800, plus 50 per cent of the income over $1,600. In the author's office, associates receive two-week paid vacations up to five years, three-week paid vacations afterward, plus one week's sick leave each year (cumulative), and hospital insurance. A retirement program is being planned.

122 East Johnson Street, Madison, Wis.

The dentist's role in dental compensation claims

Leonard S. Morvay. *Indust.Med.&Surg.* 26:430-432 Sept. 1957

The dentist's reluctance to express an opinion concerning the application of the workmen's compensation law is based on lack of available information on the subject. The compensation law concerning dental and jaw injuries varies in each state. The dentist should familiarize himself with the law in his state; if there are no definite specifications, he should study opinions and interpretations already on record. These are usually available in the local law library.

An opinion built on a foundation of fact and precedent can stand up under questioning. Should the case go to court, the dentist's opinion should be logical and scientific, but phrased in language laymen can understand.

The dental examination should lead to a complete and detailed description of dental and oral tissue. It should include every tooth involved in the claim. The findings should be detailed; that is, classification of caries present in each tooth; type of restorations; presence and extent of damage to fillings or tooth structure in the injured region; abnormal position of any natural teeth; firmness of teeth in the sockets; condition of the gingiva and alveoli surrounding teeth in the region involved; malformed teeth; state of dental prophylaxis; reaction to percussion; type of occlusion and whether disturbed; presence of crepitation; presence and locations of fractures in teeth or jaws; results of transillumination of teeth, and pulp tests. The dentist should determine whether

each condition was related to the industrial trauma.

The report or testimony also should include: (1) roentgenographic interpretations based on at least two views at different angles of each region involved; (2) type of emergency treatment given; (3) recommended treatment and approximate date of completion; (4) prognosis; (5) approximate cost of treatment, based on an average fee charged in the area of residence of the injured, and (6) duration of temporary disability and date when the employee may be expected to return to partial or full-time employment.

Roentgenograms should be dated, placed in the employee's envelope, and filed for future use. The observations and treatments rendered should be noted. The record should include what was done, the medications or materials used, and the fee for each operation.

The attending dentist should make a reasonable attempt to have the injured employee back at his usual work as soon as possible. He should not unnecessarily prolong the treatment or make appointments that interfere with an employee's working hours.

The fee for a dentist's court testimony should be that which is charged in his own office. It should be based on an hourly rate and cover the actual time lost from the office, that is, "portal to portal." The people for whom the dentist is to testify should be so informed prior to court appearance, or even before an examination is made or treatment started.

30 Central Avenue, Newark, N.J.

Controlling pernicious biting of lips, cheeks and tongue

Harry Barishman. *New York Univ.J.Den.* 15:146, 151 June 1957

Patients who persistently bite their lips, cheeks and tongue during mastication suffer distress and are justly worried about the serious consequences of such chronic irritations. They believe the fault lies in the dentition. But many patients continue this persistent biting in spite of full mouth rehabilitation.

This insidious biting is not constant. The patient may be free of it for weeks and then suddenly find that he is biting himself repeatedly. This offers a clue to the problem.

Such biting is caused primarily by poor chewing habits which these patients have acquired. Most of these biting incidents occur during periods when the individual is under tension. At such times, he becomes careless in his eating habits. He may chew rapidly, opening the jaws wider than necessary and permitting the lips to remain open while chewing. When the jaws are opened too wide, the cheeks and lips are stretched and are in close contact with the buccal and labial surfaces of the teeth. When the jaws are closed rapidly, the timing between such closure and the retraction of these soft tissues is not always coordinated.

Similarly, the tongue, in its function of mixing and routing the food, assumes various forms and positions, resulting in protrusions into the interocclusal rest space and also may be caught and injured.

These injuries produce swelling of the tissues, causing them to protrude into the interocclusal rest space, thus making them even more vulnerable to impingement.

A group of patients who also suffer from biting of this kind are those who have had edentulous spaces in their mouths for many years prior to rehabilitation. The cheeks, lips and tongue lack tonicity and normal form as a result of having bulged into the edentulous regions. When the partial or complete dentures are inserted, these tissues protrude abnormally into the interocclusal rest space and are vulnerable to impingement. This condition usually persists until the tissues return to normal.

Many children with normal occlusion, but with voracious appetites, frequently will bite themselves because they masticate rapidly and carelessly.

All such patients can help themselves in a simple manner which the writer has found effective. All they have to do is to get into the habit of chewing with their lips closed. Once they acquire this habit, their biting troubles can be eliminated. With the lips closed, the following objectives are attained:

1. The degree of jaw opening and movement is reduced and under control.
2. The speed of mastication is reduced.

3. The mobility of all soft tissues involved is reduced automatically, controlled and stabilized.

4. The pernicious biting can thus be eliminated.

1 Hanson Place, Brooklyn, N.Y.

Varicose veins: an occupational hazard of dentists

(Propos sur les varices)

D. Tressler. *Rev.franç.odontostomat.* 3:1279-1286 Oct. 1957

Varices, enlarged and tortuous arteries, veins or lymph vessels, especially varicose veins, generally are caused by a standing posture endured for eight or more hours every working day. This condition ranks high among the occupational diseases associated with the practice of dentistry.

Varicose veins occur mainly in the parts of the blood stream which are farthest from the heart, such as in the veins of the legs and thighs, the lower portion of the large intestine (hemorrhoids) and the spermatic cord (varicocele).

In the prevention of varicose veins the mechanism of causation must be considered. The most important causative factors are the hydrostatic pressure exerted on the veins when the body is in an erect position, and extreme fatigue. Normally, there are valves in the veins which permit the blood to flow only toward the heart. Because of the segmental arrangement of the valve system, the venous pressure decreases during extreme muscular activity.

Varicose veins rarely are a serious threat to life or to an extremity. Treatment often is sought because of the disfiguring appearance. The most common symptom is extreme pain in the region of the dilated veins.

In instances of long-lasting varicosities, pathologic changes may develop in the skin, resulting in a chronic irritation (varicose eczema) which often progresses to chronic ulceration. In isolated instances in which the veins are extremely enlarged, the patient may complain of fainting spells and a rapid heart beat. Spontaneous clotting often develops because of the stagnation of blood, producing thrombophlebitis. In rare instances, a varicose vein ruptures with a considerable loss of blood. Hemorrhage can be controlled by immediately elevating the involved leg above the level of the heart and applying a pressure pad over the bleeding point.

The treatment of varicose veins has gone through many cycles. The most satisfactory method consists of removing the main venous trunk, the internal and external veins, by surgery. If this process of subcutaneous stripping of veins is performed properly, complications are rare and the results excellent. Attempts to treat varicose veins by injections of sclerosing solutions alone have not been successful.

The time-honored wearing of well-fitted elastic stockings or bandages may obtain temporary relief from pain but not healing.

Dentists suffering from varicose veins should work in a sitting position whenever possible, select a recreation or diversional interest and learn the art of relaxation.

Dentists generally are poor patients and extremely defensive when they are examined and treated. This attitude also may be considered as a professional hazard which can be overcome only by self-education.

27, Rue de l'École-de Médecine, Paris 6, France

Diagnosis and treatment of the toothache

Paul K. Hill. *Texas D.J.* 75:302-310 June 1957

Diagnosis and treatment of toothache may demand all of a dentist's knowledge of pulp and periodontal diseases with their many accompanying symptoms.

Dental pain has many sources and causes. In hyperemia of the pulp or in serious pulpitis, the pain is sharp, whereas in the other pathologic conditions of the pulp or in the early stages of acute alveolar abscess the pain is generally dull. In the early stages of pulpitis the pain is intermittent, whereas continuous pain is generally indicative of a dying pulp or a dead pulp with periapical involvement.

The toothache has many sources and causes, including a hyperemic pulp, pulpitis, thermal changes, erosions, electrical currents set up by dissimilar metals in contact with each other, cracked teeth, acute infections (either periapical or periodontal) and fillings in supraocclusion. At

times pain may be referred to the teeth even though the primary cause is in an adjacent structure; for example, inflammation of the sinus wall or during a cold or when associated with a systemic disease such as malaria, leukemia or influenza. Tenderness of the teeth is often noted during menstruation and pregnancy. Often painful dental symptoms occur during the menopause as well as in some psychosomatic disturbances.

A number of methods of determining the cause and location of the aching tooth may be employed, including roentgenograms, the electric pulp test, thermal test, percussion, mobility test, palpation and anesthetic test.

One of the dentist's greatest contributions to humanity is the relief of pain. He should call on all of his knowledge and ability to perform this duty. Relief of the toothache is based on a correct diagnosis. In many instances a tentative diagnosis may be made from subjective symptoms given by the patient, particularly the character, onset and duration of pain. The diagnosis always should be confirmed by clinical tests. With these means pain can be relieved and controlled, treatment instituted and teeth preserved in a state of health and comfort.

403 First Trust Building, Pasadena, Calif.

Dental fees in 1956

J.A.D.A. 55:585-591 Oct. 1957

Five thousand independent (nonsalaried) dentists responded to a recent nationwide survey of dental practice (including several aspects of dental fees) conducted by the Bureau of Economic Research and Statistics of the American Dental Association.

More than a fourth of dentists in private practice regularly vary their fees according to the patient's ability to pay, although only a tenth systematically classify their patients according to income. Six of every ten dentists charge higher fees for adults than for children, although the proportion varies from about two fifths in the Southeast to about three fourths in the Northwest and Far West. Only a fifth of all dentists charge patients for appointments broken without advance notice. The median charge per broken appointment is $4.

Wide variation was reported in fees charged for five dental services. For each service the highest fee reported was at least ten times the lowest fee. The "composite fee," an index of general fee level, indicated that dentists in the Far West charged considerably higher fees than dentists in other regions, followed in order by the Southwest, Middle East, Central, New England, Northwest and Southeast.

The mean composite fee for dentists aged 25 to 29 was considerably lower than that for dentists of all ages. It increased gradually with age through age 45 to 49; thereafter, a decline set in, and the lowest mean was for the oldest dentists. By city size, lowest fees were reported in the smallest places and highest fees in the largest places, although some of the largest cities had lower fees than would be expected from this pattern. Differences in fees according to dentist busyness were not great. The busiest dentists—those who could not accommodate all would-be patients—reported the lowest average composite fee.

The mean and median fees for five dental services rendered by dentists throughout the United States were as follows: Dental prophylaxis, $5.09 and $5.00; amalgam filling for one-surface cavity, $4.58 and $4.00; simple extraction (uncomplicated with local anesthetic), $4.40 and $4.00; complete upper acrylic-base denture, $104.45 and $100.00, and acrylic jacket crown, $47.52 and $50.00.

222 East Superior Street, Chicago 11, Ill.

Parenteral administration of drugs: results of cooperative research survey II

Austin H. Kutscher, James Mercadante and M. L. Thompson. *New York D.J.* 23:431-434 Nov. 1957

A survey was made with regard to the parenteral administration of drugs by 90 responding dental general practitioners. Among the tabulated results are the following:

Have you ever administered a drug parenterally in your private practice? Yes, 52; no, 35. If so, how many administrations per month? One to five, 22; 6 to 20, 6; 21 to 50, 5; 51 to 100, 4, and more than 100 administrations, 1.

Which drugs have you administered parenterally? Antibiotics other than penicillin, 4; penicillin, 45; narcotics other than meperidine hydrochloride, 5; meperidine hydrochloride, 8; thiopental sodium, 6; vitamins, 4; hyaluronidase, 1; atropine or scopolamine, 6; chlorpromazine hydrochloride, 1; succinylcholine chloride, 1; stimulants, 3; barbiturates, 4; antinauseants, 1.

In which sites? Deltoid muscle, 33; gluteus muscle, 36; other, 9.

If not, have you any desire to administer drugs parenterally? Yes, 20; no, 19.

Have you ever administered a drug parenterally in a clinic? Yes, 28; no, 57.

Among the factors contributing to the relative paucity of parenteral drug administration in dentistry are the following, according to the survey: the medical profession frowns on the administration of drugs parenterally by dentists; the average patient prefers the oral administration of drugs; the use of parenteral drugs demands additional equipment and space; while in school the dentist receives little training in the parenteral administration of drugs.

400 North Eighth Avenue, Highland Park, N.J.

Bacteriological study of salivary contamination of the dental contra-angle and handpiece

Mary C. Crowley and G. T. Charbeneau. *J.A.D.A.* 55:775-779 Dec. 1957

A study was undertaken to determine to what extent the internal parts of the contra-angles and handpieces become contaminated with salivary organisms during routine operating conditions.

S.S. White no. 9 Doriot handpieces and Densco UFS contra-angles (plus 43 latch-type contra-angles) were studied.

The data indicate that salivary contamination occurs only at the bur tube of the tapered shank contra-angle, whereas air contaminants were found in all areas, as shown by the use of aerobic and anaerobic cultures. A greater number of contaminations (salivary and other) of the bur tube and head gear seem to occur with the latch-type contra-angle when used for prophylaxis.

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A current statement about the National Dental Association

Clifton O. Dummett. *Bul.Nat.D.A.* 16:12-13 Oct. 1957

The National Dental Association is a professional organization of ethical negro dentists in the United States and its possessions. The association, a nonprofit corporation, was organized in 1932 at Bordentown, N.J., and incorporated under the laws of the State of Virginia. Starting as the Tri-State and growing into the Interstate, the organization finally emerged as the National Dental Association, that name being assumed after the present American Dental Association relinquished the title.

A need for the organization exists since negro dentists have been excluded from membership in most Southern local and state dental societies. This exclusion automatically rendered the affected negro dentist ineligible for membership in the American Dental Association.

The objects of the N.D.A. are to improve the public health, to promote knowledge, ideals and ethics of dentistry, and to foster understanding and fellowship among its members. The requirements for membership include good standing in one of the association's constituent societies, licensure in such allied organizations as are recognized by the association, and annual dues of 20 dollars.

The association lists 27 constituent societies. Its quarterly journal is sent to all negro dentists, all dental schools and to members of the American Association of Dental Editors.

Although there is no official relationship between the National and American Dental Association, there exist cordial and tolerant relations. Members of the American Dental Association may become members of the National Dental Association.

In 1945 there were 1,533 negro American dentists, mostly concentrated in the South Atlantic states of Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida and the District of Columbia.

The N.D.A. aims at the full and unhampered participation of all its members in American dentistry. It strives to give purpose and direction to the increasing aspirations of negroes to make their

contributions within the framework of American dentistry. The author hopes that as a consequence of the ultimate elimination of segregation within the professions, the functions of the N.D.A. may be modified to include an extension of fellowship and fraternity among its members during the undoubtedly protracted period of assimilation.

Current problems include the need to strengthen the association's constitution, revise its bylaws, adopt progressive policies, espouse intelligence and dignity in its deliberations, participate more expansively in professional and scientific affairs, encourage research and cooperative educational effort, and devise plans for stimulating among high school students an interest in dentistry as a career.

Post Office Box 388, Tuskegee Institute, Ala.

A method of measuring porosity of porcelain teeth

John O. Semmelman. *J.D.Res.* 36:945-949 Dec. 1957

For nearly 200 years porcelain has been a standard material for use in most dental restorations. A test for porcelain is described which is rapid, accurate and reproducible, and which is unaffected by shade, form and size of the specimen. The test quantitatively reveals the extent of interior bubbles which will pit a ground surface, and permits correlation of strength and density properties.

The tooth is ground and the exposed inner surface is polished and observed under magnification. The visible bubbles are counted and their number per square millimeter calculated. If the microscope of a Knoop hardness tester is used, the filar head also permits measurement of bubble size and, from this, the calculation of bubble volume and per cent porosity.

Ten fields are measured on each specimen and an average is reported. Three or four of these fields, chosen at random, should be in the enamel colored portion of the tooth, the remainder scattered over the dentin colored portion. In each of the ten fields, the largest single bubble is measured for diameter. The diameters of the ten largest bubbles are averaged, yielding a figure called "average maximum bubble diameter." With the arbitrary assignment of zero value to the smallest bubble, the average maximum bubble diameter is divided by two to obtain an "average bubble diameter." This is, in turn, is used to calculate the average bubble area and the percentage porosity.

The formula for calculation is: per cent porosity $= 100 \times N \times \pi R^2$. When N equals the average number of bubbles per square millimeter and D is the maximum diameter measured, then R, the radius of the average bubble, is equivalent to D divided by 4. Since this is the porosity of a random plane, the area porosity may be considered representative of volume porosity.

This method of measurement has been checked for reproducibility and has been found to be fairly consistent, both for the test method and the products. The method has been modified by the National Bureau of Standards to specify porcelain tooth density in government contracts.

The method reveals that air-fired porcelain has more than 60 times the porosity of vacuum-fired porcelain. Air-fired porcelain has bubbles six times larger in area, and 2.5 times greater in diameter, than vacuum-fired porcelain.

Dentists Supply Company of New York, York, Pa.

Effects of tuberculostatic drugs on the development and eruption of teeth

(Actiunea medicamentelor tuberculostatice asupra dezvoltarii dintilor)

S. Szabó, L. Csögör and E. Andorján. *Stomat.Bucharest* 4:195-201 Sept. 1957

At the Dental Clinic of the University of Bucharest, Romania, the effect of certain tuberculostatic drugs on the eruption and development of teeth was studied in rats.

The effect of the following drugs were investigated: (1) streptomycin; (2) isoniazid; (3) para-aminosalicylic acid, and (4) thiosemicarbazone.

The following conclusions were reached:

1. Streptomycin, isoniazid, para-aminosalicylic acid and thiosemicarbazone exert no significant effect on the eruption of teeth in young rats.

2. Streptomycin, isoniazid and to a smaller extent thiosemicarbazone, administered parenter-

ally in amounts similar to those used in the treatment of patients to inhibit the growth of *Mycobacterium tuberculosis*, and also in significantly higher amounts, seem to intensify the development of teeth in rats.

3. Isoniazid, administered orally, promotes the development of teeth in rats. Similar effects, however, do not occur if thiosemicarbazone is administered orally. The oral administration of para-aminosalicylic acid also has no influence on the development of teeth in rats.

The results obtained show that the treatment of chronic tuberculosis in children and infants with these tuberculostatic drugs will have no unfavorable effect in regard to eruption and development of teeth.

Strada Progresului 8, Bucharest, Romania

Investments—collection of delinquent account

V. Everett Hunt. *Am.J.Orthodont.* 43:922-925 Dec. 1957

On the original visit of the prospective dental patient and his parents, the dentist estimates the cost, unless he believes there may be some aspect which requires further study before an exact decision can be made.

After making the diagnosis the dentist meets at his desk with the parents. He discusses pertinent aspects of the treatment, confirms the amount of the fee and asks if they have a preference as to the method of payment. In most instances the parents will say, "Well, doctor, how do you want it to be paid?" The method of payment is not so important as the fact that the method will be written down and signed by the parents. The card for recording the patient's history has printed on it a regular bank contract form. After the parents have agreed to a satisfactory payment plan, the dentist fills in the spaces in the card, rereads the text to the parents, makes a small check mark by the appropriate dotted line, and asks them to sign. No parent has yet refused to sign the contract.

While the parents are signing the contract, the dentist fills in a small "financial memorandum" card with a copy of the selected payment plan on one side and bookkeeping information on the other. The dentist presents this card to the parents as a reminder of their obligation and also for use in making out their income tax report.

The dentist now asks the parents what day of the month would be best for them to make their payments. Usually they ask when the dentist would like to have the payments. A definite date is set and noted on the margin of the contract.

Thus, the dentist has (1) stated a definite fee for his service, (2) held a businesslike discussion with the parents involved on the method of meeting their obligation and arrived at a suitable arrangement, including the dates on which the payments are to be made, (3) made out a contract with this information, and (4) had the contract signed. With these steps the collection problem is virtually eliminated.

In the event payments are not forthcoming, a series of four collection forms is used. It is preferable to speak to patients by telephone, if possible. Letters are impersonal and often ineffective. Each of the forms provides for the setting of a definite date for the person to catch up on the missed payment. Each form is more insistent than the previous one.

707 I Street, Eureka, Calif.

A history of dental service at the Kansas City General Hospital

Ralph W. Edwards. *J.Kansas City Dist.D.Soc.* 33:12-17 Sept. 1957

Since 1870 the Kansas City General Hospital has existed as a municipal institution for the care of the indigent. When the first unit of a new hospital was completed in 1908 on the present site, dental service was initiated, with the appointment of two dentists, William T. Stark and Drury J. McMillen, to the attending staff. The first dental internship was established at the Kansas City General Hospital in 1934, through the efforts of two physicians, Buford G. Hamilton and Paul F. Stookey, and of Arthur F. Schopper, then representative of the dental service on the executive committee of the hospital.

The first dental intern was Don T. McKee, who made an enviable record during his year of service, in spite of the handicap of inadequate instruments and equipment. In 1935, excellent

equipment, ample instruments and an x-ray machine were obtained for the dental service. The service continued with one intern each year until January 1, 1938, when a second dental intern was added. In 1941 the dental house staff was increased to three members when a one year residency in oral surgery was opened. This residency had a prerequisite of a year's internship in an approved hospital. During the war years, the internship and residency were reduced to nine months each for a time. Graduates of all dental schools of the United States are eligible for appointment to the service. At present three residencies are offered.

The service is primarily diagnostic and surgical. No effort is made to maintain restorative dentistry at the hospital. The basis of the training is medicodental relations, with ample clinical experience in exodontics, anesthesia, maxillofacial injuries, tumors of the mouth and jaws, and roentgenography. The training embraces attendance at a weekly tumor clinic and clinical pathological conferences, and the intern-resident lectures given throughout the year. An attending staff member is present daily for operations, ward rounds, outpatient service, and general supervision of the training program. The Jackson County Medical Society maintains a library of 32,000 volumes in the hospital building. The objective of the service is to offer a two-year program of resident training for those preparing for the practice of oral surgery.

310 West Forty-seventh Street, Kansas City, Mo.

Study models

C. O. Wallace. *Texas D.J.* 75:660-662 Dec. 1957

The most neglected steps in oral diagnosis are the making of study models and mounting them on an adjustable articulator. The value derived from study models in diagnosis, treatment planning and explanation to the patient more than justifies the time and expense involved. Study models are of value in considering partial and complete dentures, fixed bridges, and in periodontics, pedodontics and orthodontics.

The making of study models requires advanced planning and some practice. All the necessary equipment—the trays, mixing bowls, spatulas and impression materials—should be kept in a convenient place. Impression materials should be mixed and used according to the manufacturers' recommendations. The dentist can proceed with the prophylaxis, take the medical and dental history, render any emergency treatment necessary, or take a bite impression in wax, compound or alginate. The assistant can pour, trim and mount the study models.

A mixture of four parts of fast-setting plaster to one part of artificial stone will give an excellent cast. This mixture of plaster and stone is mixed with water at room temperature and vibrated into the impressions. One impression at a time is poured to give time before the material sets to trim the excess material with a knife. By the time the second impression is poured and trimmed, the first model is ready to be separated from the impression and the trimming and shaping completed. If the office does not have a large trimmer, a small, inexpensive electric saw and a large wood rasp can be used to finish the study models. Study models can be mounted in about one minute in an adjustable articulator.

Post Office Box 167, Nacogdoches, Texas

Dental practices offered for payment of annuities

(Praxisveräusserung auf Rentenbasis)

Walther Müller. *Bl. Zahnhk., Zürich* 18:80-81 May 1957

In the classified advertising columns of many foreign dental journals, especially those published in Austria, Germany, Italy and the Scandinavian countries, advertisements have appeared recently in which dental practices and offices were offered for sale on installment payments of annuities.

Although this type of sale seems to be uncommon in Switzerland and the United States, it seems to have certain advantages for both the buyer and the seller.

The buyer, usually a young dentist without the means to obtain a comparatively modern and well-equipped dental office and an already-established dental practice, is fortunate in

achieving his goal quickly and without undergoing dangerous financial liabilities.

The seller, usually an older dentist who desires to retire, receives, instead of the usual cash settlement which never is sufficient to guarantee security for his remaining years of life, an annuity secured by a certificate of warranty.

For instance, a dentist who estimates the value of his office and practice as being approximately 50,000 Swiss francs (about $10,000), will receive a yearly payment of 6,000 francs (about $1,200) or a monthly payment of 500 francs ($100) if he is 60 years old at the date of sale, and a yearly payment of 7,500 francs ($1,500) or a monthly payment of 650 francs ($150) if he is 70 years old.

Frequently the seller agrees to stay with the buyer for a certain period (usually six months) to introduce him to the regular patients and to acquaint him with the office routine. In addition he can evaluate the young dentist's abilities and trustworthiness. It is advisable, therefore, to enter first into a temporary contract, and to make the agreement legal after the trial period.

Römerhof, Zurich, Switzerland

Malpractice and the art of dentistry

Joel Friedman. *New York J.Den.* 27:371-374 Dec. 1957

Malpractice is "bad" practice, failure to meet standards of the profession in the geographic area where the dentist practices. The dentist is expected to give conscientious and devoted service to the patient. He ought not delegate responsibility. He must keep accurate clinical records. His prognosis should be conservative. These precepts are basic to the art of practicing dentistry. Malpractice entanglements frequently are an indication of the dentist's shortcomings in this respect.

An increase in claims in New York over the years has been noted by insurance carriers. One carrier reports that the number of claims closed has risen from an average of one for every 44 insured members in the period 1950 to 1954, to one for every 23.7 members in the 1955-1956 period. The number of malpractice cases settled out of court is increasing, and this stimulates further increases in the number of suits. To stop this rise in claims, cases must be adjudicated by trial.

A recent survey for the Medical Society of the State of New York showed that 14 per cent of claims were the result of "unnecessary criticism" by a colleague. The professional man must be just to his fellow practitioner, and never permit himself to indulge in unnecessary criticism. Criticism of a colleague is dangerous to the critic, the colleague and the profession. The critic may find himself sued for slander, the colleague may have his professional standing unjustly damaged, and the profession suffers by the trading of disparagements attendant on the lawsuits.

There are many reasons why the dentist should maintain adequate malpractice insurance. In almost every instance where the dentist is sued for a sum larger than his coverage, the insurer and defendant dentist are seriously hampered in arriving at a satisfactory conclusion. In the event that a dentist is insured for a sum much less than he is sued for, and the verdict is for more than the maximal liability of the insurance policy, the dentist is responsible for paying the balance. If such a verdict is even remotely possible, the dentist should employ independent counsel to protect his interests.

The dentist well informed in the art of dentistry is least likely to be involved in malpractice action. No dentist can rely on his malpractice insurance to shield him from the consequences of inexcusable acts.

The profession's code of ethics is a compendium of principles to guide members in the art of dental practice. Enlightened self-interest demands that all dentists scrupulously observe the discipline of the profession's ethical code.

499 Lincoln Place, Brooklyn 38, N.Y.

Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Autogenous bone grafts in the treatment of intrabony periodontal pocket: an histological investigation. *Isra Yuktanandana. 1957.* M.S. *University of Alabama.*

Derangements of the temporomandibular joint. *Cecil Raymond Albright. 1957.* M.S. *Baylor University.*

Respiration of gingival tissue. *Alvin David Senter. 1956.* M.S. *University of California.*

Negative chronatropism and inotropism of procaine amide on the heart. *J. Richard Allard and William H. Ware. 1957.* M.D.S. *University of California.*

Dentinal apposition in rat incisors following cavity preparation by different operative procedures. *Michel Meyer Serfaty. 1957.* M.S. *University of Illinois.*

Integration of certain variants of the facial skeleton in Class II Division 2 malocclusion (Angle). *Sam F. Wallis. 1957.* M.S. *University of Illinois.*

A study of the effect of dietary habits and refined carbohydrate intake on the dental caries experience in two hundred children. *Alegria C. Zita. 1957.* M.S.D. *Indiana University.*

The stress factor in acute necrotizing ulcerative gingivitis. *Charlie Franklin Konze. 1957.* M.S. *State University of Iowa.*

Factors to be considered in designing a classroom for effective use of audio-visual aids in dental education. *James Bernard Bush. 1957.* M.S. *State University of Iowa.*

A bacteriological study of the contamination of contra-angles and sterilizing procedures. *Adath Josefa Aponte-Rivera. 1957.* M.S. *University of Michigan.*

Surface conditions of stone in contact with alginate and rubber base impressions. *Martin J. Cain, Jr. 1957.* M.S. *University of Michigan.*

An electromyographic analysis of the temporal and masseter muscles and determination of interocclusal clearance in cleft palate patients. *Donald Seymour Brown. 1957.* M.S. *University of Michigan.*

The occlusal anatomy of the human deciduous molars. *William R. Lynch. 1958.* M.S.D. *University of Nebraska.*

A radiographic and clinical appraisal of growth and function of the oral structures of operated cleft palate children. *Ralph M. Roberts. 1958.* M.S.D. *University of Nebraska.*

Space changes in lateral dental quadrants in the mixed dentition. *William Edward Armstrong, Jr. 1957.* M.S. *University of North Carolina.*

A facial quadrilateral for normal ten year old white children. *Marshall Banks Corl. 1957.* M.S. *University of North Carolina.*

An eight year serial growth study showing basic dental relationship changes. *John Watt Girard, Jr. 1957.* M.S. *University of North Carolina.*

A radiographic study of alveolar bone patterns. *George Staffieri. 1957.* M.S. *University of Pittsburgh.*

Development of a methodology for cephalometric and clinical evaluation of Class II, Division I discrepancy cases treated by serial extraction procedures. *Charles William Nichol. 1957.* M.S. *Saint Louis University.*

Cephalometric and clinical evaluation of Class I discrepancy cases treated by serial extraction procedures. *Hugh M. Wong. 1957.* M.S. *Saint Louis University.*

Anterior open bite as related to condyle-gonion height and hypothesia. *Leon Leslie Bolton. 1956.* M.S. *University of Tennessee.*

The relationship of marked mandibular arch asymmetry and the ability to perform certain unusual tongue movements. *Harold Roberts Wooldridge. 1956.* M.S. *University of Tennessee.*

A survey of some commercial adhesives: their possible application in clinical orthodontics. *John Franklin Sadler. 1956.* M.S. *University of Tennessee.*

Some practical psychological considerations in orthodontic practice. *George William Huckaba. 1956.* M.S. *University of Tennessee.*

Evaluation of lateral plane radiography of the temporomandibular joint. *Charles Bernard Malloy. 1956.* M.S. *Washington University.*

A study of the relationship of depth of bite and speech defects. *Randle John Gardner. 1956.* M.S. *Washington University.*

Studies on the glucose metabolism of *Lactobacillus casei. Robert Edward Gillis. 1958.* PH.D. *Western Reserve University.*

Elimination of pain during interventions in ambulatory dental patients (Die Schmerzausschaltung bei Eingriffen an ambulanten Patienten unter besonderer Berücksichtigung der zahnärztlichen Praxis). *Claus Schwarz. 1956.* DR.MED.DENT. *University of Heidelberg, Germany.*

Dental technic of the Etruscans (Über die Zahntechnik der Etrusker). *Siegfried Sarau. 1956.* DR. MED.DENT. *University of Leipzig, Germany.*

Design and effectiveness of the masticatory surfaces of complete dentures: comparative investigations of Gysi's method and the more recently introduced technics (Zur Frage der Gestaltung und Wirksamkeit der Kauansätze bei totalen Prothesen: Vergleichende Untersuchungen zwischen der Methode von Gysi und neueren Systemen). *Armin Hänsel. 1956.* DR.MED.DENT. *University of Leipzig, Germany.*

Causes of the extremely high caries incidence in the dentition of 177 children from 6 to 13 years old: a serial examination of 1,274 children of the district of Hofgeismar near Marburg (Zur Frage der Ursachen des besonders starken Kariesbefalles der Gebisse bei 177 Kindern im Alter von 6-15 Jahren: In einer Untersuchungsreihe von 1,274 Kindern des Kreises Hofgeismar bei Marburg). *Anneliese Schäfer-Arnold. 1956.* DR.MED. DENT. *University of Marburg, Germany.*

"Carbocaine," a new local anesthetic ("Carbocain," ein neues Lokalanästhetikum). *Volker Holzinger. 1956.* DR.MED.DENT. *University of Marburg, Germany.*

Changes in the vascular system of the pulp in the teeth of old people (Mutazione del contingente vascolare nella polpa dentale in denti senescenti). *Giuseppe Pavone. 1955.* SPEC.ODONT. *School for Dental Specialties, Dental Institute, University of Bari, Italy.*

Clinical and statistical studies of 105 cases of periodontal diseases (Considerazioni clinico-statistiche su 105 casi di paradentomi). *Maria Caforio. 1955.* SPEC.ODONT. *School for Dental Specialties, Dental Institute, University of Bari, Italy.*

Concentration of hydrogen in human saliva in dental caries and periodontal disease (Über die Wasserstoffkonzentration des menschlichen Speichels bei Zahnkaries und bei Paradentopathien). *Hannelore Fischer. 1956.* DR.MED.DENT. *University of Bonn, Germany.*

Temperature of the oral mucosa and variations of temperature caused by pathologic processes (Die Temperatur der Mundschleimhaut und ihre Veränderungen bei pathologischen Prozessen). *Günther Frerich. 1956.* DR.MED.DENT. *University of Bonn, Germany.*

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The index to volume 2 of DENTAL ABSTRACTS, covering the twelve issues published in 1957, is now available. The index includes a list of the periodicals from which articles are abstracted, with addresses. Copies may be obtained free of charge from the Subscription Department at the Central Office, 222 East Superior Street, Chicago 11, Illinois.